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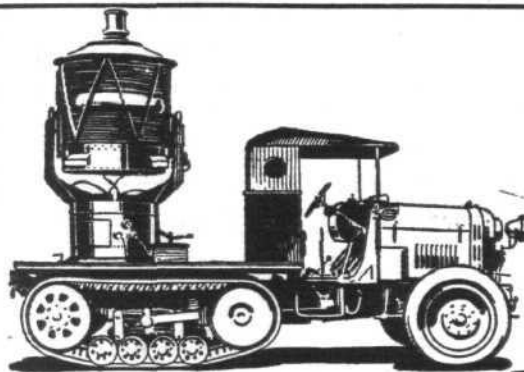
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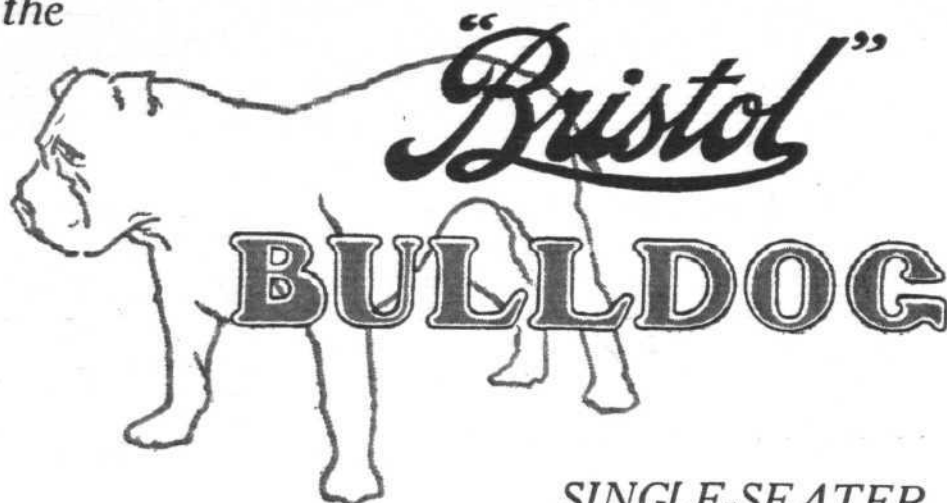
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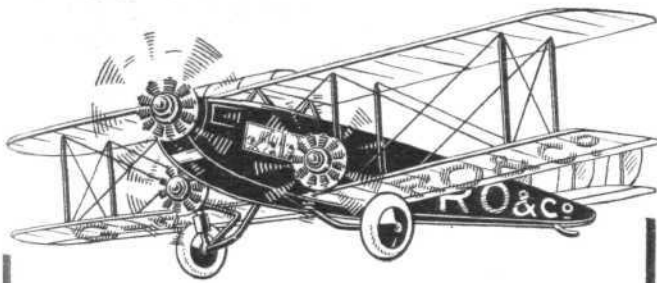
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DIARY OF CURRENT AND FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in this list—

1929.	
Oct. 24 Lecture, "The Art of Flying Land and Sea Machines," by Capt. N. Macmillan, before R.Ae.S. and Inst.Ae.E.
Oct. 31 Guggenheim Safe-Aircraft Competition Closes.
Nov. 7 Lecture, "Recent Developments of Fuels and Dopes for Aircraft Engines," by Dr. A. E. Dunstan, before R.Ae.S. and Inst. Ae.E.
Nov. 21Lecture, "The Inspection of Materials," by Mr. L. W. Johnson, before R.Ae.S. and Inst.Ae.E.
Nov. 28 Lecture, "Flying and Maintenance from the Owner's Point of View," by Sq.-Ldr. H. M. Probyn, before R.Ae.S. and Inst. Ae.E.
Dec. 5 Lecture, "Recent Work on the Autogiro," by Senr. J. de la Cierva, before R.Ae.S. and Inst.Ae.E.
Dec. 12 Lecture, "The Development of Materials for Aircraft Purposes," by Dr. W. Rosenhain before R.Ae.S. and Inst.Ae.E.
1930—	
Jan. 22 Lecture, "The Strategical Mobility of Air Forces," by Gp.-Capt. C. L. Courtney, before Royal United Service Inst.
Mar. 5 Lecture, "Air Co-Operation with Mechanised Forces," by Wing-Com. T. L. Leigh-Mallory, before Royal United Service Inst.

EDITORIAL COMMENT



THE new rigid airship R.101 has completed her shed trials, and is awaiting favourable weather conditions before being brought out of the shed and put on the mooring mast at Cardington. In certain quarters, an attempt is being made to convey the idea that "there is something wrong with R.101." To those familiar with airship work, the suggestion is merely childish, but as a few may be misled into having certain misgivings it is as well to point out what the actual position is. To begin with, a flat calm is desirable for the first "manhandling" of the airship out of her shed and on to the mast.

A strong gust might readily cause the airship to sway when partly out of the shed, and as there is but little clearance, a girder might easily be damaged against the door frame. Once on the mast, the airship should be safe enough, even in winds up to gale force, although it is obviously desirable to do the first mooring tests under less severe conditions. It is conceivable that conditions could get so bad that the safest course would be to cast off the airship and cruise around until the weather moderated, but naturally it is not desired to run the risk of having to do the first flying tests under conditions which would be more applicable to emergency proceedings. Therefore those responsible for the tests are waiting until the meteorological officers can forecast a period of four or five days of good weather. This will allow of the mooring and preliminary flying tests being carried out under suitable conditions. Surely none could claim that this is other than a very elementary and wise precaution, and no amount of cheap gibes will taunt those responsible into bringing the airship out before such conditions can be counted upon.

Concerning the airship herself, we publish a good deal of information in this week's issue of FLIGHT, although considerations of space have prevented us from giving anything like a detailed description. We think, however, that sufficient information is given to enable readers to form a fairly good idea of

the general "scheme" of R.101. As was to be expected in an airship of such an experimental character, there is much in the airship to be proud of and pleased with, and there is a good deal that might have been better, and which unavoidably gives cause for disappointment. The main structure of the airship, due to Boulton and Paul, Ltd., is one of the finest pieces of engineering work which one could wish to see. And although official figures for structure weight are not available, there is good reason to believe that the structure is very "efficient," i.e., of very good strength/weight ratio.

Of the aerodynamic qualities of the airship nothing is known, and these can only be determined when flying tests such as the measurement of drag by deceleration test, the measurement of turning circle, controllability and stability have been made. Results of model tests are, of course, available, and past experience indicates that a fair degree of accuracy may be expected from these.

A good deal has been made in certain quarters of the problems and difficulties encountered in connection with the machinery of R.101. There is no denying the fact that the engines are heavy, nor that the failure of the variable pitch airscrews to materialise in time is a serious drawback by necessitating the reservation of one of the four engines for astern work only. One immediate result of this last is that the performance will be considerably reduced, as but four engines will be available for forward thrust. It is, however, estimated that with four engines running, the top speed will be 70 m.p.h., and cruising speed about 60 m.p.h. This cruising speed probably corresponds to running the four engines somewhat throttled, i.e., at less than their continuous full power speed.

It is a fair assumption that with the four engines throttled to give about 500 b.h.p. each, the cruising speed will be 60 m.p.h. The bench test consumption figure for continuous full-power conditions is 0.385 lbs. per horse-power per hour. Assuming a slightly worse consumption when throttled to 500 b.h.p., say 0.4 lbs./b.h.p./hour, the four engines will consume approximately 800 lbs. of fuel per hour. The normal fuel capacity is 29 tons, or about 65,000 lbs. Thus

the normal endurance, if our estimated figures are approximately correct, should be something like 81 hours. Allowing an average head wind of 15 m.p.h., which is usual for making estimates of range, the ground speed is reduced to 45 m.p.h. This is certainly disappointingly low, but one should not be stampeded into the assumption that such a low speed made good would render the airship valueless. A ground speed of 45 m.p.h. for 81 hours gives a range of about 3,650 miles. The great-circle distance from Cardington to Egypt is approximately 2,300 miles. Allowing for detours, let us call the distance 3,000 miles. At 45 m.p.h. ground speed made good, this would represent a duration of 66.7 hours. Call it in round figures 67 hours. The airship would still have 14 hours' fuel left, or a reserve of 17.3 per cent. This is with normal tankage. Should the tanks on the passenger deck be used for fuel, the reserve would become very much larger.

While 45 m.p.h. ground speed is certainly not impressive, it is worth while pointing out that 67 hours to Egypt still represents a not inconsiderable saving of time, as compared with the present air route, on which passengers leave London at 9 a.m. Saturday morning and arrive at Alexandria at 9.30 a.m. the next Wednesday morning, a lapsed time of about 96 hours. And this is with R.101 as she exists to-day. The fitting of variable pitch reversible airscrews, with attendant release of the fifth engine for going ahead, will result in a material increase in cruising speed, and a consequent shortening of time to 55-60 hours.

The commercial possibilities, as distinct from the technical, cannot be discussed without a knowledge of the tare weight of the airship. We gather that at present, accommodation is provided for some 50 passengers only, but whether this is because it is not desired to carry more, or due to inability to lift more with a good reserve of fuel, we cannot say. At the worst, it only means waiting for lighter engines, which it should be possible to produce now, aided by the experience in producing the "Tornado." This is one of the improvements upon which it is permissible to count. It affects the commercial utility of R.101, but not seriously the technical considerations.



THE PRINCE'S MOTH: As previously reported in "Flight," H.R.H. the Prince of Wales has acquired a D.H. "Gipsy Moth" for his personal use. We show above a photo of this machine—G-AALG. ("FLIGHT" Photo.)

British Triumphs in the Air, on Land and Sea

- 1918** A Napier-engined D.H. aeroplane climbed to a height of 30,500 feet in 66 minutes. At this time no human being had ever soared so high.
- 1921** A Napier-engined Gloster aeroplane won the Aerial Derby. Speed 163.4 m.p.h.
- 1922** A Napier-engined Supermarine flying-boat regained the Schneider Trophy for Great Britain at a speed of 149 m.p.h.
- 1922** A Napier-engined Gloster aeroplane won the Aerial Derby. Speed 180 m.p.h.
- 1923** A Napier-engined Gloster aeroplane won the Aerial Derby. Speed 192.4 m.p.h.
- 1926** The first non-stop crossing of South Atlantic Ocean carried out by Commandante Franco flying a Dornier flying-boat with two Napier engines.
- 1927** Schneider Trophy won by a Napier-engined Supermarine-Napier seaplane flown by Flight-Lieut. S. N. Webster, A.F.C. Speed 281.669 m.p.h.
- 1928** Capt. H. S. Broad, flying D.H. Hound, fitted with Napier engine, secured three World's speed records whilst carrying loads of 500 and 1,000 kilogrammes.
- 1928** The greatest formation flight ever carried out was made with four Supermarine-Napier Southampton flying-boats, each fitted with two Napier engines. The machines flew from England to Australia, round Australia and back to Singapore, covering 180,800 engine miles without mechanical trouble.
- 1929** The first non-stop flight from England to India was carried out with a Fairey monoplane fitted with Napier engine. 4,130 miles in 50 hrs. 38 mins.
- * * * *
- 1929** The highest speed ever attained on land was made by Major Sir Henry Segrave when he drove his Irving-Napier car over one mile at the amazing speed of 231.36 m.p.h.
Capt. Malcolm Campbell set up world's land speed records at Verneuk Pan with his Napier Arrol-Aster as follows :—over 5 miles, speed 211 m.p.h.; over 5 kilometres, speed 216.53 m.p.h. They both used Napier engines.
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- 1929** The world's motor-boat speed championship was won at Miami by Major Sir Henry Segrave, driving Sir Charles Wakefield's Napier-engined "Miss England."
Sir Henry Segrave at the Lido with the same boat made six runs over the measured mile, averaging a speed of 92.8 m.p.h.
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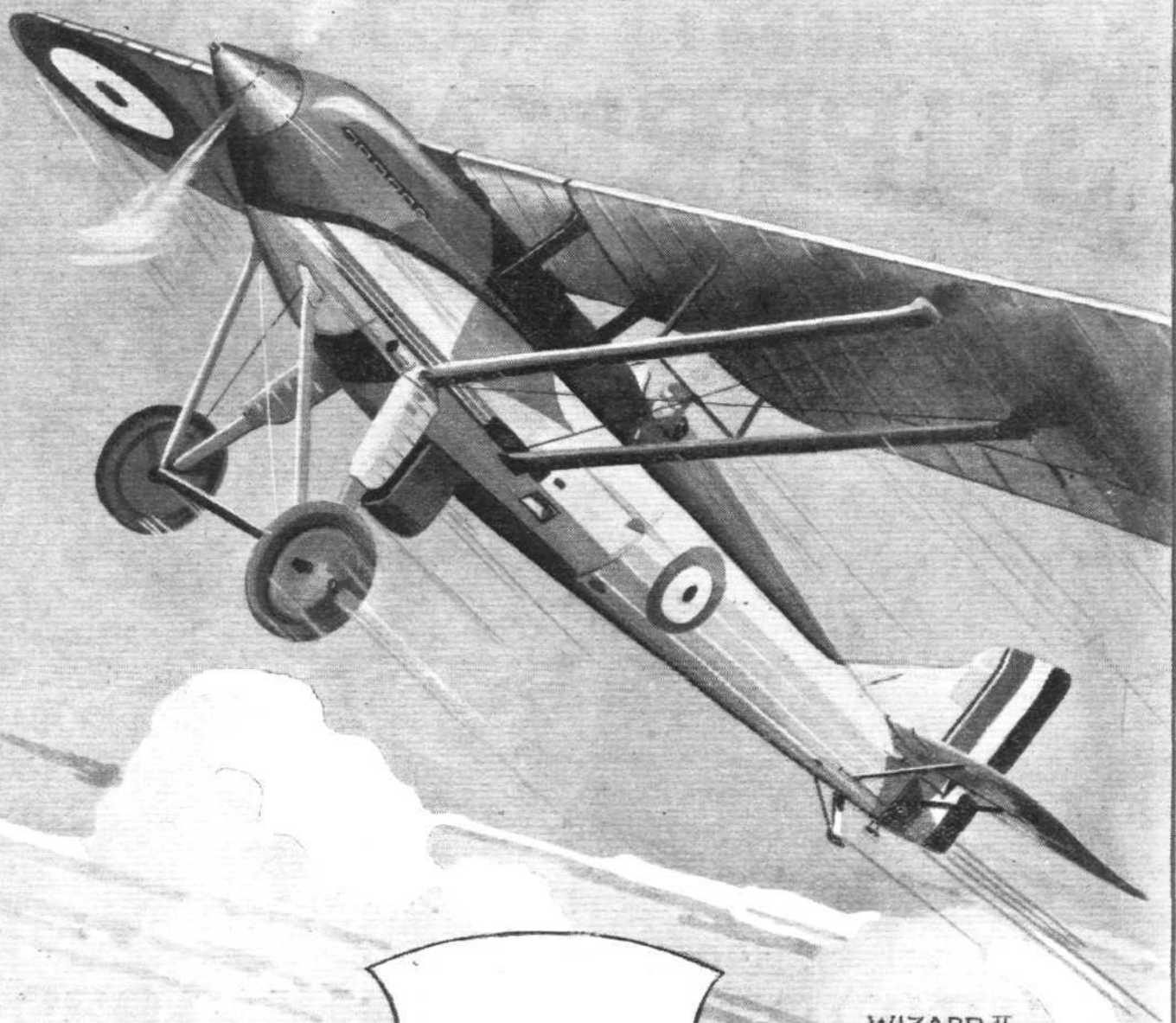
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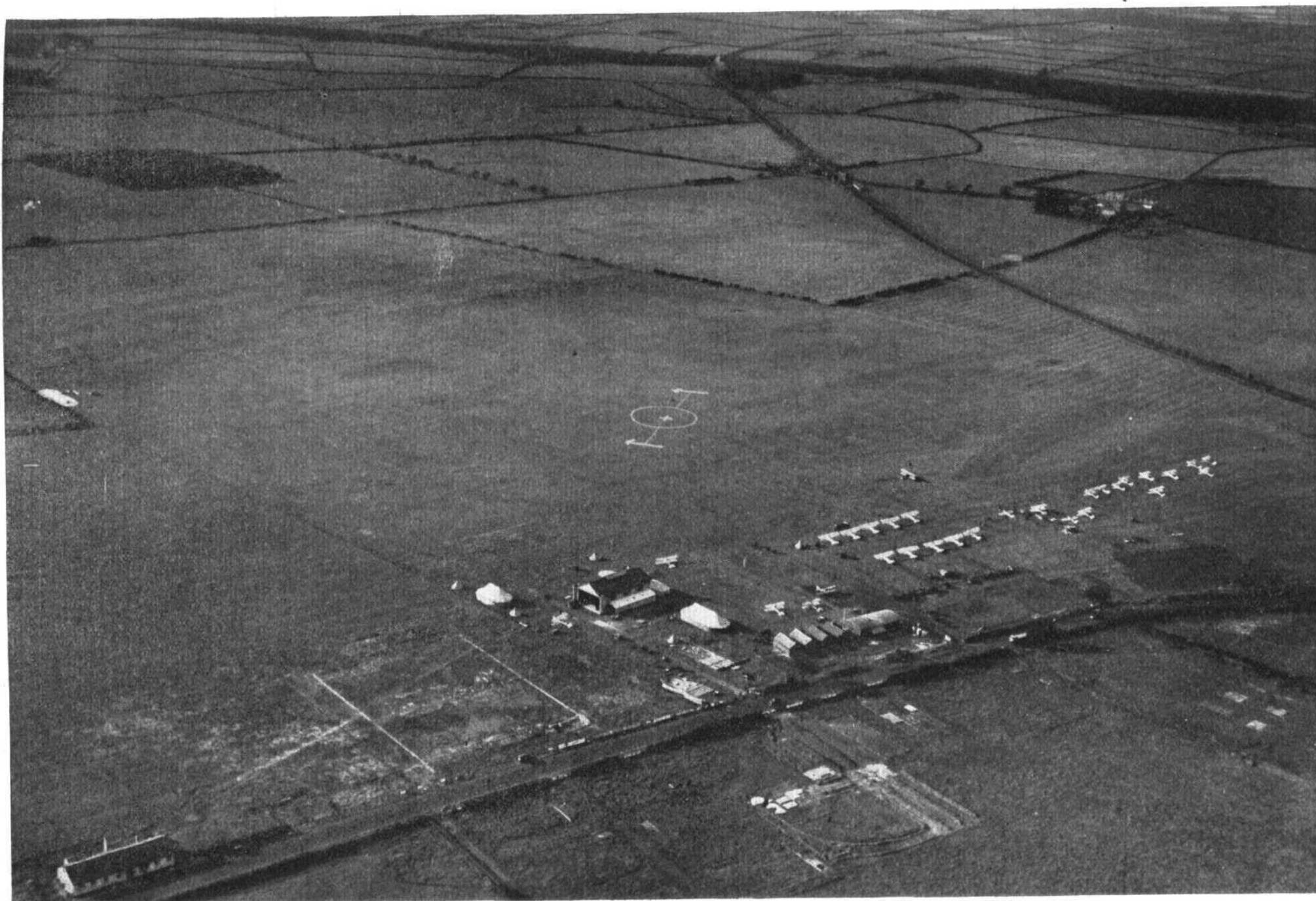
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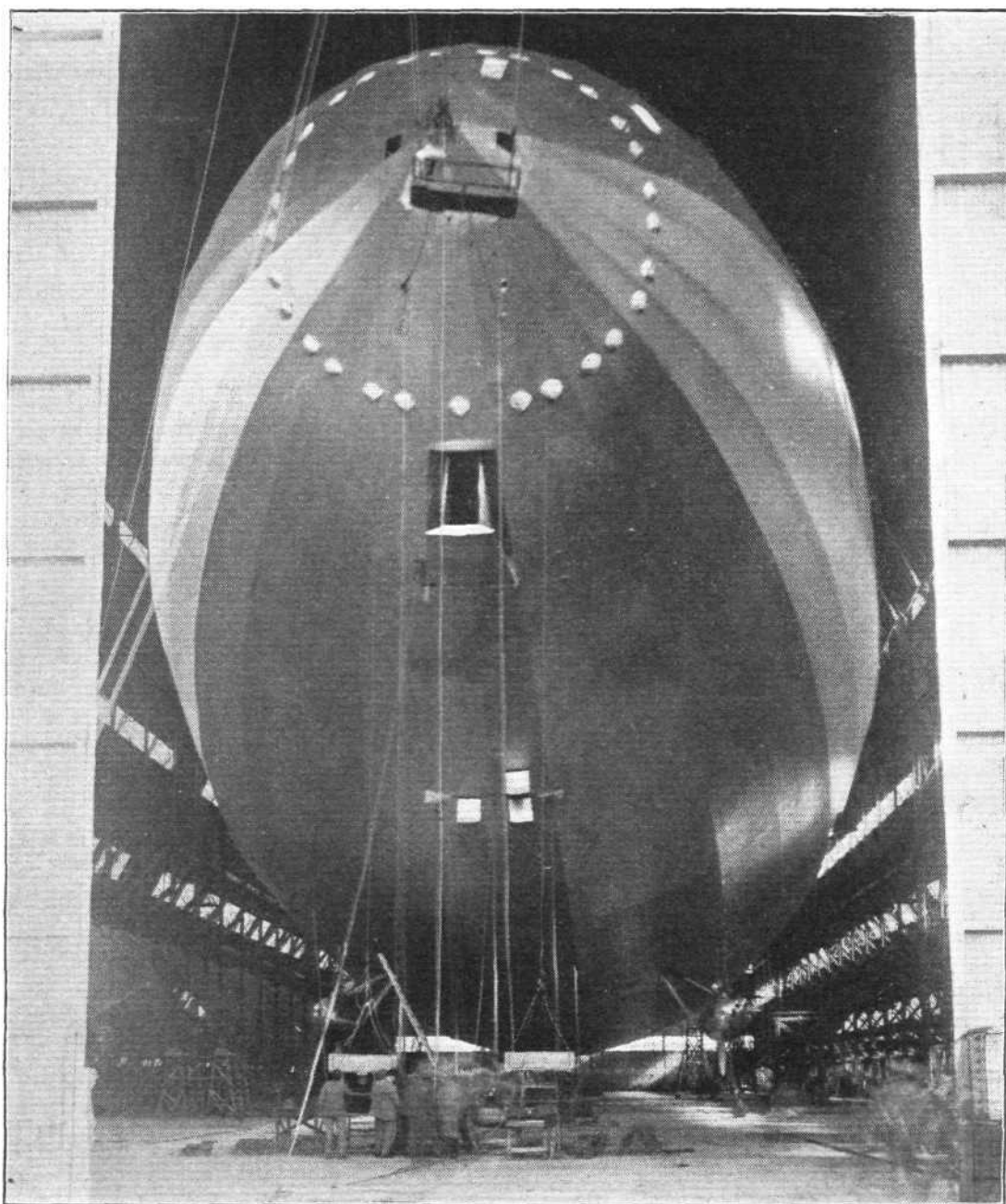


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AERODROMES FROM ABOVE : This addition to our series of Aerodromes seen from the air is Cramlington, the Headquarters of the Newcastle-upon-Tyne Aero Club ("FLIGHT" Photo.)



R.101

AIRSHIPS are materialising at last. After unforeseen delays in construction, the two 5,000,000 cub. ft. rigids are now completed, and one has passed its "shed trials," while the other is expected to do so during the next week or so. On Wednesday of last week representatives of the Press were permitted to visit the Royal Airship Works at Cardington, Bedfordshire, to inspect the Government airship R.101, and it is likely that the other large airship, R.100, designed and built by the Airship Guarantee Co. at Howden, Yorkshire, will be ready for inspection in a couple of weeks or so. After mooring tests at the mast at Cardington the airships will proceed, as soon as weather permits, to do their home trial flights, R.101 first and R.100 afterwards.

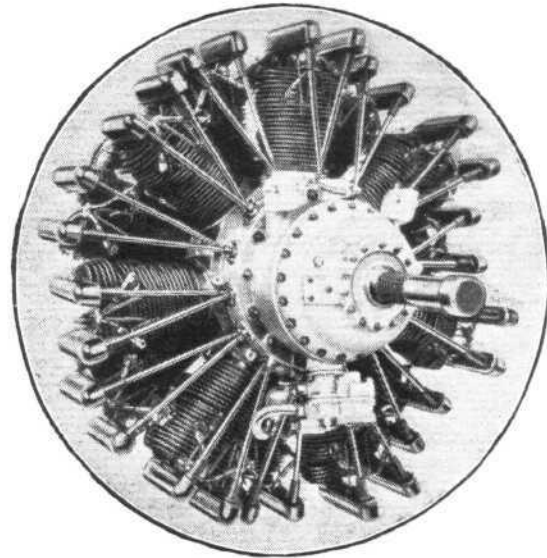
Although information concerning R.101 has been published in *FLIGHT* from time to time, in the form of *résumés* of lectures, original articles, etc., it is thought that readers will like to have collected in one issue the main data and such information as can be given concerning the airship, and consequently we give below a description of R.101, together with a brief summary of the history of the airship

programme which has now resulted in the completion of two rigid airships, one of which, the R.100, has been designed and built by private enterprise (the Airship Guarantee Co.), and the other, R.101, partly by the State as represented by the Air Ministry, and the Royal Airship Works, and partly by private firms, notably Boulton & Paul, Ltd. Both airships are, of course, produced to the order of the Air Ministry.

After some five years of vacillation, during which we could not make up our minds about airships, first thinking we wanted them and then thinking we didn't, deciding again that we did, and changing our mind and concluding, on the alleged score of economy, that we would be compelled to abandon airships altogether, a definite airship development policy was established in 1924, under the Labour Government then in office. The revival of airships was in a very large measure due to Commander Burney, who at one time was almost a voice crying in the wilderness, but who never lost faith, and whose efforts were at long last rewarded—chiefly, we imagine, because of the enthusiasm of Lord Thomson, who was Air Minister in the 1924 Labour Government, and

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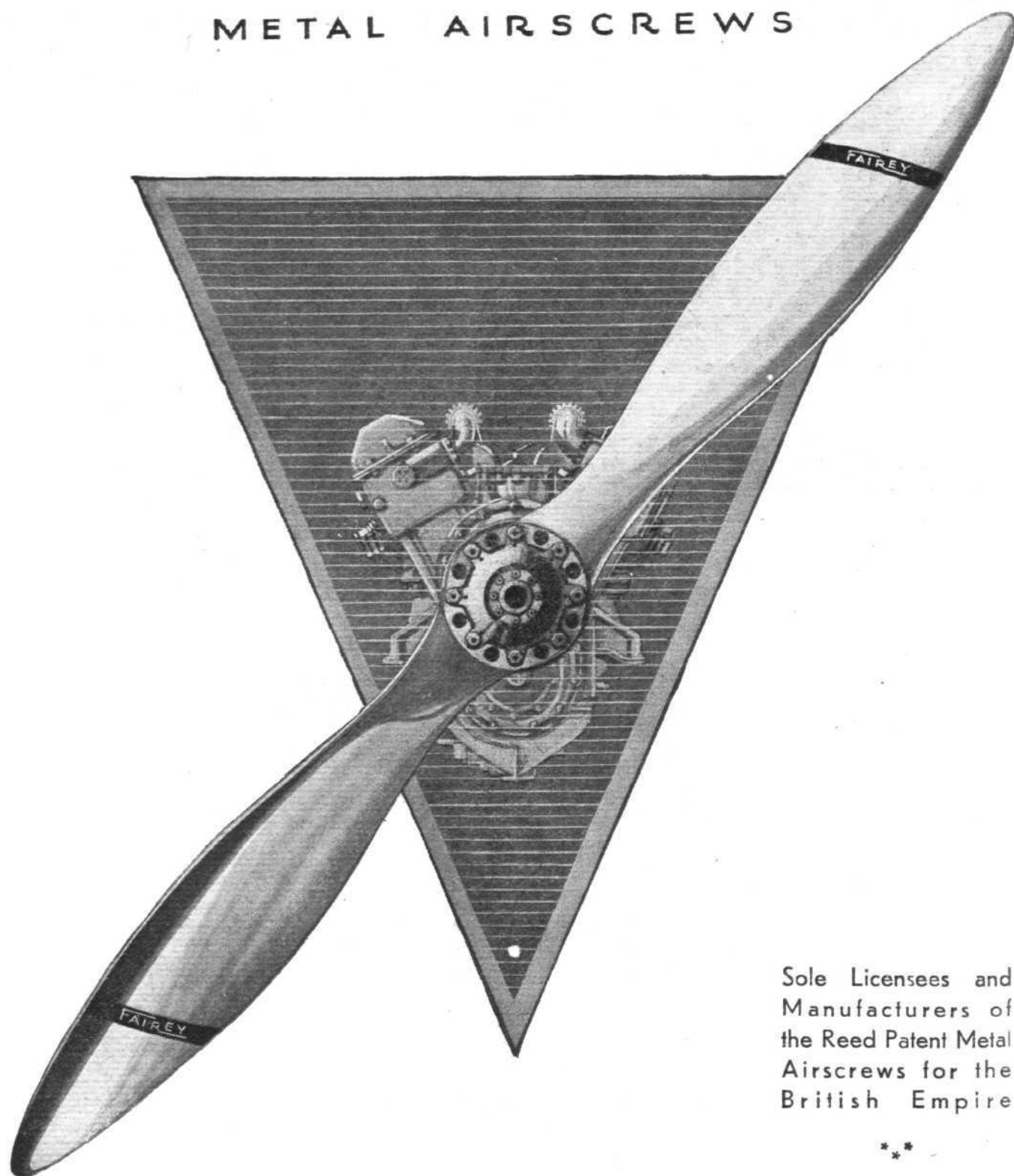
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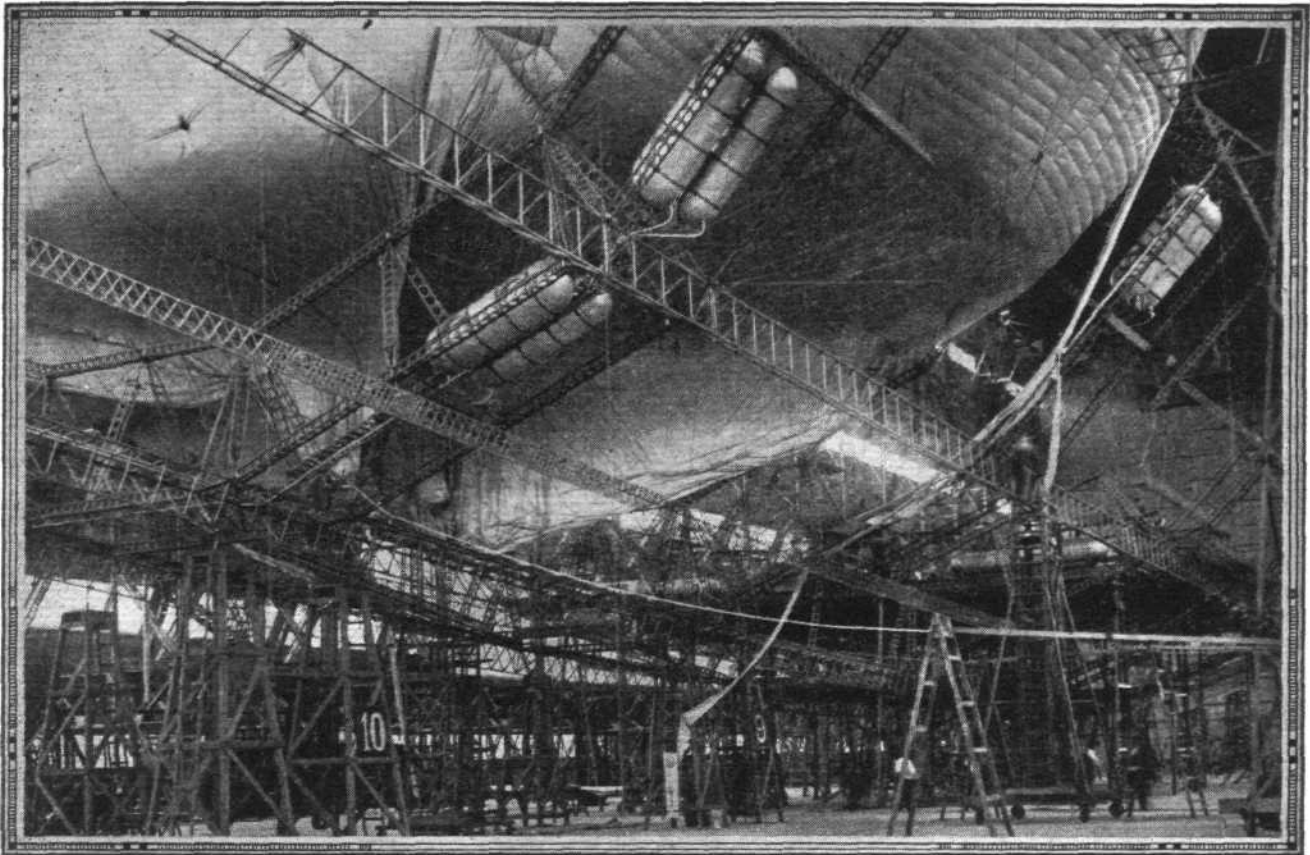


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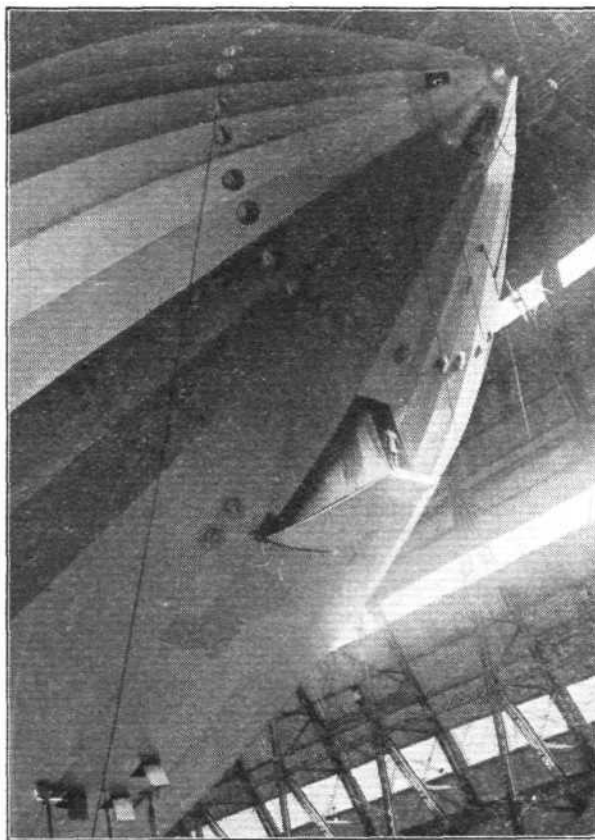
R.101: Portion of the structure, before putting on the outer cover. Some of the gas bags may be seen in place. Note also the placing of the fuel tanks. ("FLIGHT" Photo.)

whose choice of the title "Thomson of Cardington" was probably no mere chance or coincidence. The airship development policy established by the Government in 1924 called for the simultaneous construction of two airships, each of approximately 5,000,000 cub. ft. capacity, one to be designed and constructed at the Royal Airship Works at Cardington, Bedfordshire, and the other by Commander Burney's company, the Airship Guarantee Co. (a Vickers concern). The Airship Guarantee Co. secured the land and premises at Howden, Yorkshire, and there has been designed and built the Vickers airship R.100.

After certain changes and modifications in the details of the airship policy, the production of the two rigid airships proceeded independently, the designers of the Airship Guarantee Co. deciding on Duralumin as the chief structural material, while in the Cardington airship, R.101, it was decided to use steel where the employment of this material promised to give an improved strength/weight ratio, Duralumin elsewhere. One result of the freedom given to the two designing offices has been that we have now completed two airships, both larger than any hitherto built anywhere, differing in almost every essential detail not only from each other, but also from any rigid airships built abroad. Neither airship follows Zeppelin practice, but whether one or the other will prove the "better" type still remains to be seen. The breaking away from the accepted Zeppelin form of con-

struction was, in neither case, dictated merely by the desire to "do something different." There were very good reasons for a radical change in the type of construction. The

increase in size, to nearly twice the capacity of previous airships, at once afforded an opportunity to adopt other methods, and British designers had, in any case, not a great deal of experience with the Zeppelin type, so that whichever form was chosen, much research would be necessary before the construction of such large airships could be undertaken with any degree of confidence. This is not the place for a comparison between the R.100 and the R.101, the details of the former being reserved for a future occasion, but it may be of interest to state here quite briefly that the main feature of the R.100 is the use of Duralumin girders in which the hollow booms are made up from relatively narrow strips of the material, wound into spirals which form the tubes, the overlapping edges of adjacent convolutions being riveted together. In the R.101 the outstanding features are: the use of rigid unbraced transverse rings with main longitudinals of steel tube girder construction, and a "parachute" type of ballonnet suspension.



Nose of R.101: Note the vent holes for maintaining an internal pressure on the envelope. The hinged gangway by which the interior will be reached from the mooring mast platform is also clearly shown, as well as the three hatches through which the guy ropes will be dropped. ("FLIGHT" Photo.)

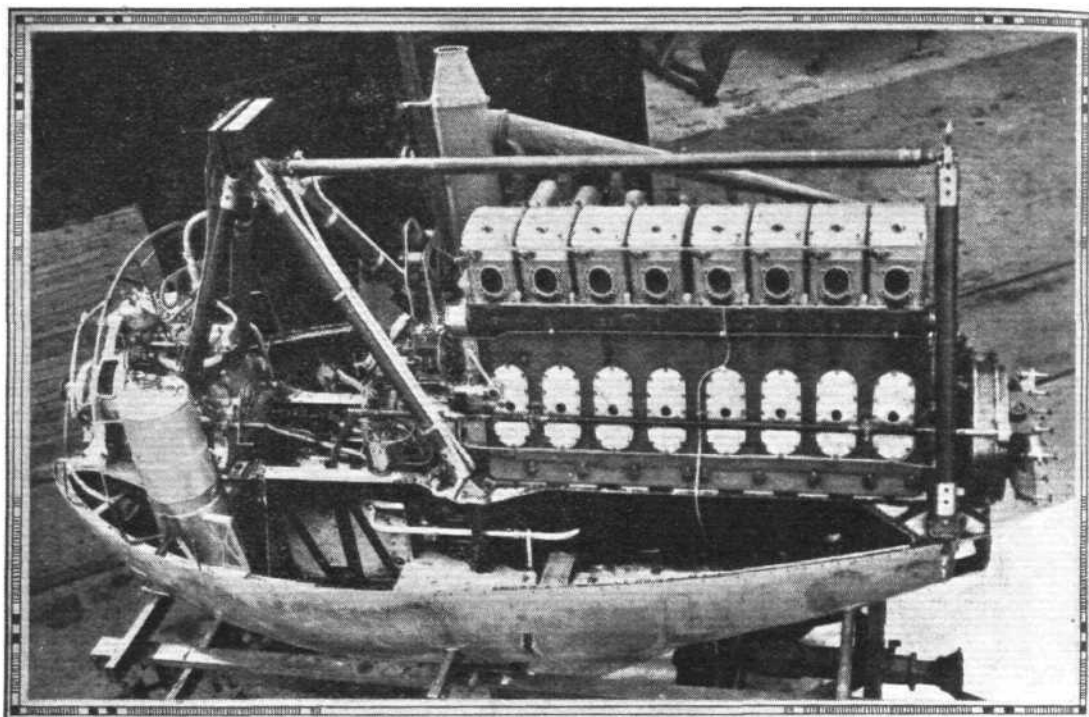
Research Work

Before actual construction was commenced, and even before the design work had proceeded beyond the stage of broad outlines, it was necessary to carry out a great deal of

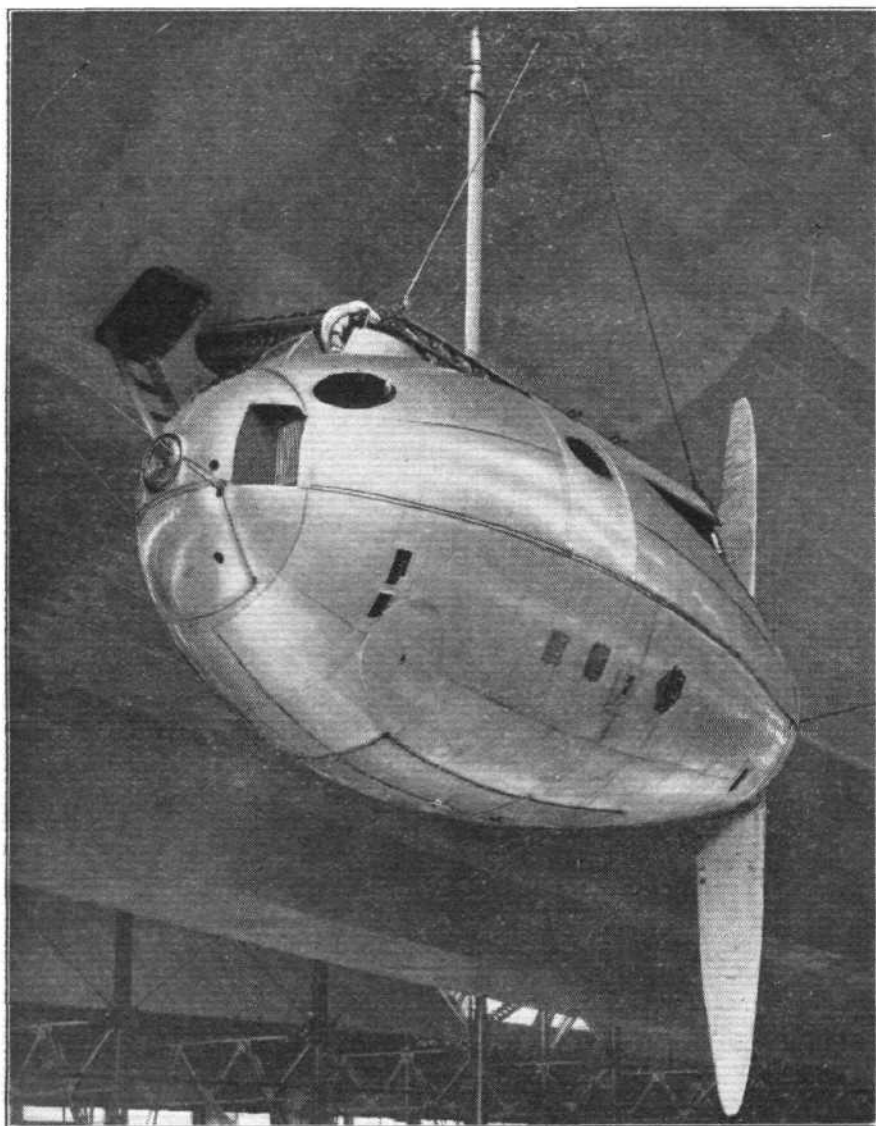
research work. This took the form partly of model tests in the wind tunnels, and partly full-scale work with the old airship R.33, which was equipped for pressure-plotting experiments. The regrettable accident to the airship R.38, which resulted in the loss of many valuable lives, was due to an insufficient knowledge of the aerodynamic forces to which an airship might be subjected under certain manœuvres,

and obviously it was essential, before starting to build airships twice as large, to learn as much as possible about these forces. With this object in view R.33 was re-commissioned and carried out a series of tests. The breaking away of that airship from its mooring mast at Pulham and the damage she sustained, did not materially affect these experiments, from which much valuable information was gained.

R.101: One of the engine cars, with cowlings removed. The engine is a Beardmore "Tornado" heavy-oil compression-ignition engine. ("FLIGHT" Photo.)



R.101: The port forward engine car will, until variable-pitch propellers are fitted, be used for reversing only, the propeller being designed to give rearward thrust. ("FLIGHT" Photo.)



In the wind tunnels at the N.P.L. at Teddington experiments on models were carried out, and the results compared with those obtained from the full-scale tests with R.33. There had been some doubt in the minds of designers concerning the degree to which model test results could be depended upon to represent full-scale conditions, but the tests showed definitely that the model tests can be regarded as substantially accurate for full-scale prediction.

On the practical side experiments were made at Cardington, a complete full-size section of R.101 having been built and tested so as to provide a check on the calculations of the designers. When that had been done, and not until then, the actual form which R.101 was to take was definitely decided upon. Afterwards, whenever in the course of developing structural details, any doubt existed or insufficient information was available, tests were carried out to settle the matter. This policy was the cause of many delays, but as the airship is now to be "on trial for its life" so to speak, it was imperative that nothing be left to chance or to guess-work. The airships are some two years late in making their appearance, but the time spent in making sure of every detail should not be begrudged, if in this way we have succeeded in making as sure as is humanly possible that, if the new airships are on the heavy side as regards structure weight, they shall at any rate be amply strong for their work.

By way of actual example, it may be mentioned that special forms of electrical strain gauges were developed, which make it possible to measure the stresses in any part of the structure. These gauges were used on the test bay, and will also be fitted in large numbers during the test flights, so that the stresses set up in various manœuvres will be recorded.

In connection with the design and construction of R.101, it should be

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	Plain Engine.	Geared Engine		Plain Engine.	Geared Engine.
Approx. total weight	4000 lbs. 1820 kgs.	4115 lbs. 1870 kgs.	Time to	5000 ft. 5.25 minutes	4.25 minutes
Speed at ground level	143.5 m.p.h. 231 km.p.h.	149 m.p.h. 240 km.p.h.	" "	10000 ft. 12.5 "	10.5 "
" " 5000 ft.	139.5 m.p.h. 226 km.p.h.	145 m.p.h. 236 km.p.h.	" "	15000 ft. 26 "	21.75 "
" " 10000 ft.	134 m.p.h. 216 km.p.h.	140 m.p.h. 225 km.p.h.	" "	1000 mtrs. 3.5 "	2.5 "
" " 15000 ft.	125 m.p.h. 193 km.p.h.	131 m.p.h. 204 km.p.h.	" "	3000 " 12.5 "	10.25 "
" " 1000 metres	226 km.p.h.	236 km.p.h.	" "	5000 " 34 "	27.5 "
" " 3000 metres	216 km.p.h.	225 km.p.h.	Absolute Ceiling	19000 ft.	19100 ft.
" " 5000 metres	193 km.p.h.	204 km.p.h.		5800 metres	5830 metres
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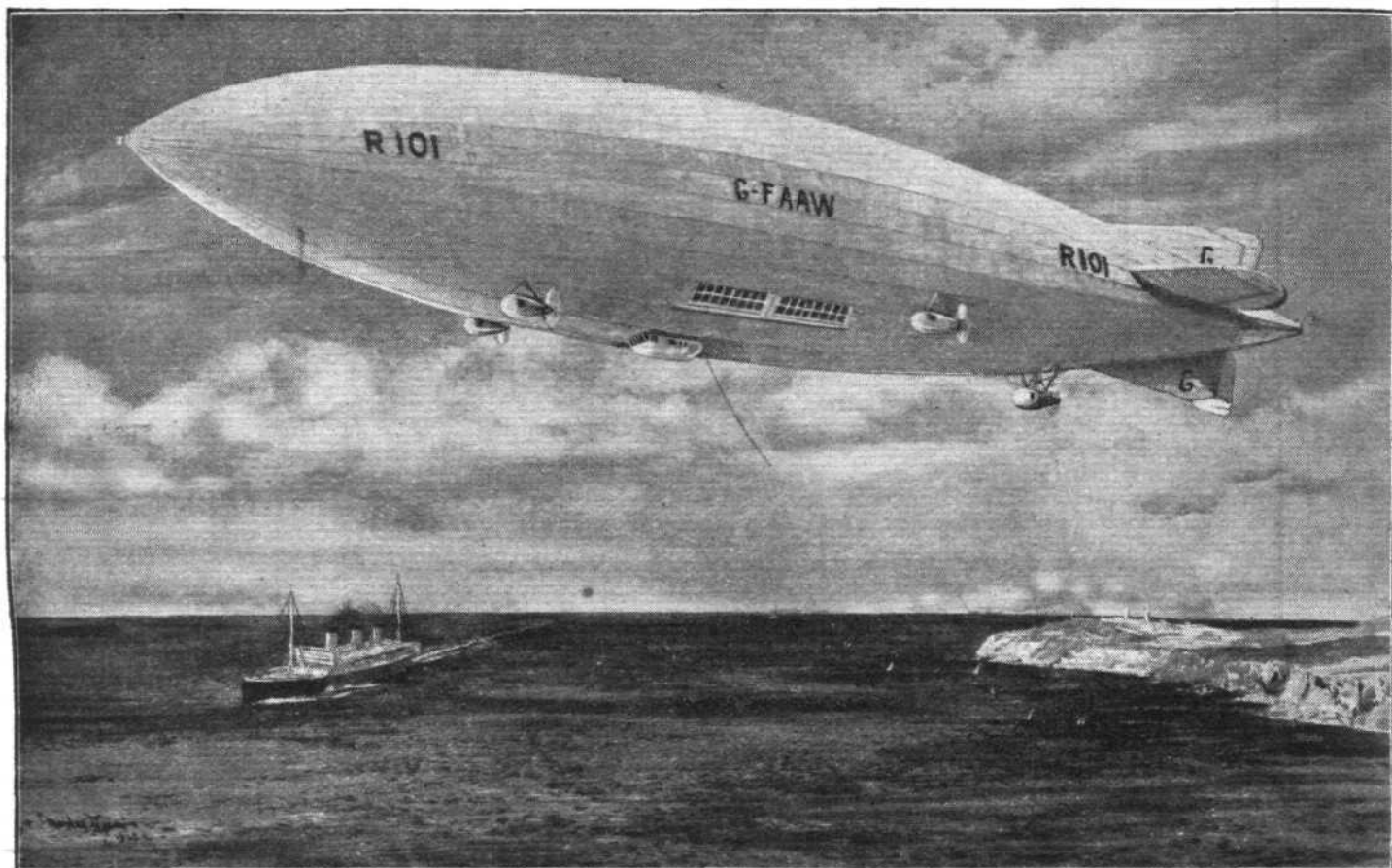
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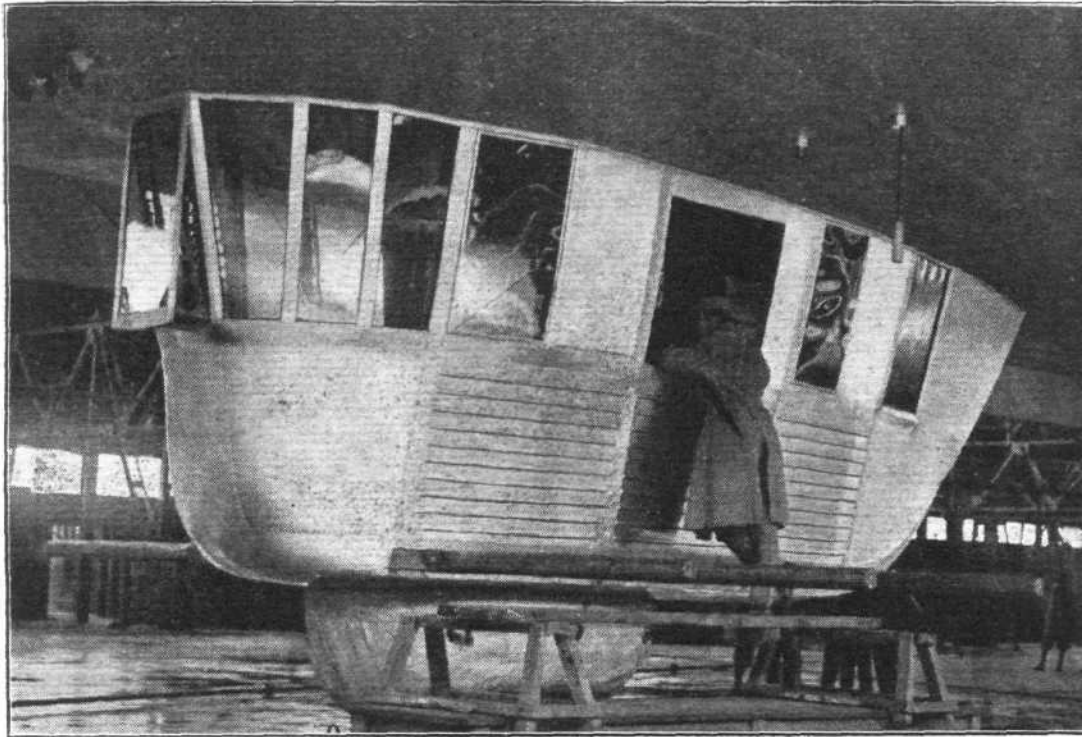
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mentioned that a somewhat unusual procedure was followed. Although R.101 is actually a Cardington-designed airship, this applies to the general "scheme" only. The firm of Boulton and Paul, Ltd., of Norwich, which had had many years' experience of metal construction of heavier-than-air craft, was entrusted not only with the construction of the girder work for R.101, but actually with the design of the

in that they are "rings," or polygons, composed of outer and inner ridge girders with radial struts, forming triangles in section, with the apices inwards toward the centre of the hull and the bases outward towards the envelope. Permanently attached to, and forming part of, the outer ridge girders are short lengths of longitudinals known as frame longitudinals. In length, these frame longitudinals are



The Control Car of R.101 is quite a small affair, but the Captain's Control Room is immediately above it, inside the main hull.
(“FLIGHT” Photo.)

The vertical and horizontal Fins of R.101 are cantilever beams, except for a steadying wire connecting them.
(“FLIGHT” Photo.)

girders. The design staff at Cardington supplied to Boulton and Paul the "single-line" diagram of the structure, and specified the loads which each individual member was to carry. The Boulton and Paul design staff was then left free to evolve the particular type of girder, and the particular type of joint which seemed best to meet the requirements. Thus, a large proportion of the credit for the very wonderful structure of R.101 is due to the Boulton and Paul technical staff, and in particular to Mr. J. D. North, chief engineer of Boulton and Paul, Ltd. The very closest co-operation between Cardington and Norwich was maintained, and Mr. North was appointed to act as consultant in metal construction to the Director of Airship Development.

The system of design was not concerned merely with the problems of the finished structure but also, and very largely, with those of erecting the component parts at Cardington after their arrival from Norwich. The system finally adopted was one which permitted of erection and assembly in a minimum of time, and with but very few workmen. Whereas, with the Zeppelin type of construction much of the assembly has to be done *in situ*, and by riveting at that, in R.101 the component units are assembled by bolting. This method, apart from the advantages which "pin jointed" frames have in being statically determinate and therefore amenable to stress calculation, greatly reduces the work of erecting, but calls for working to very close limits if the parts are to "go together" without any difficulty. It speaks well for the accuracy of Boulton and Paul workmanship that very little trouble was experienced in this respect.

Structure of R.101

Space does not permit of anything approaching a detailed description of the structure of R.101. Readers who wish to study this subject more intimately are referred to an illustrated article entitled "Building the Structure of R.101," which appeared in THE AIRCRAFT ENGINEER (Monthly Technical Supplement to FLIGHT) of November 29, 1928, and to the various papers on the airship read by Col. Richmond (the designer of R.101), and Col. Cave-Browne-Cave before the Royal Aeronautical Society from time to time, and published in the *Journal of the Society*.

The transverse "rings" or frames are, in a way, the keynote of the design of R.101. In previous airships of Zeppelin type, these frames were not in themselves stable structurally, but relied upon radial bracing wires in their own plane. The transverse frames of R.101 are self-sufficient structures



equal to the width of the "ring," and the main longitudinals are fastened to the ends of the frame longitudinals by bolting.

It will be realised that whereas the older type of "ring," stabilised by its radial wires, was somewhat in the nature of a bicycle wheel, the "rings" of R.101 are without such bracing, and the inner and outer ridge girders, with their radial struts and bracing wires, must be made strong enough



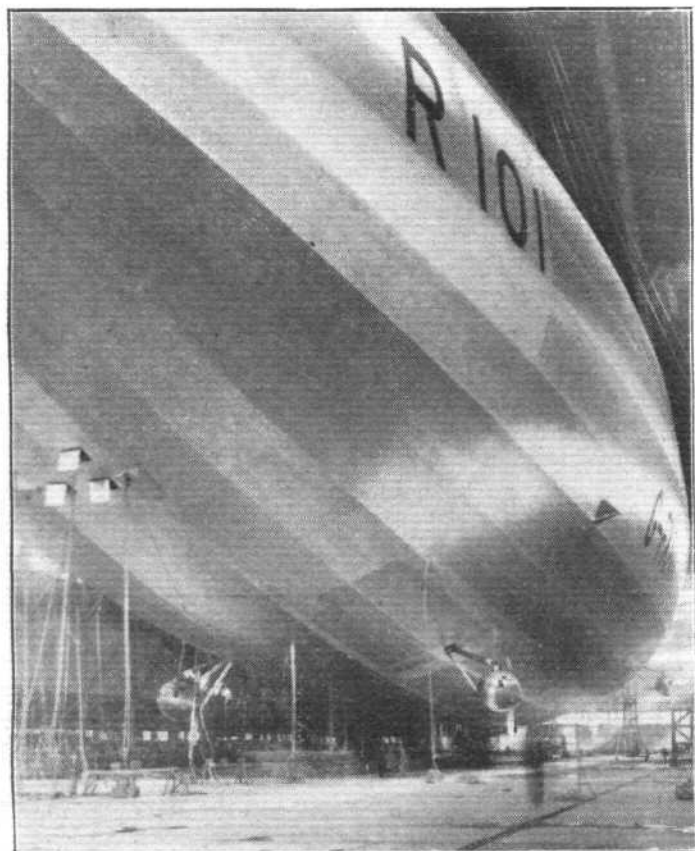
THE LOUNGE OF R.101 : This photograph was taken by electric light, and does not, therefore, show as clearly as it might the spacious nature of this compartment. ("FLIGHT" Photo.)

in themselves to take any loads imposed. A test "ring" was suspended from its upper corner, and a load of six tons was suspended from the bottom of the frame. The extension of the vertical diameter under this load was only 4 ins., on a diameter of 130 ft., so that the rigidity of the transverse

frames appears to be satisfactory. That they are slightly heavier than the older type seems probable, just as in an aeroplane a cantilever wing is heavier than a braced wing, but it was desired to look to the future rather than to the immediate needs, and therefore the extra weight was accepted. The rigid frame is very useful for stowing tanks, and for housing platforms and ladders, etc. Moreover, with the rigid type of frame it is possible to fit these items in place with the ring lying on the floor, which saves a great deal of time by avoiding the necessity for working on them at a great height after they are erected.

There are 15 main longitudinal girders and 15 intermediate longitudinal girders. Only the former are structural members proper, the intermediate girders serving mainly to assist in supporting the outer envelope and reduce the tension in the fabric of the envelope.

With the geometrical characteristics given, and the loads to be borne at any point, Boulton and Paul evolved the details of the final structure, and with their long experience of steel construction, they were able to design very efficient structure members of high-tensile steel. The large size of R.101 was partly responsible for the use of steel being feasible, but the research and experimental work done by the Norwich firm also played a large and important part, as steel members were produced, the like of which had never been attempted before in the history of engineering. To indicate that Boulton and Paul were not merely out to show that they could produce some very efficient steel girders, but that their aim was to produce the structure with the lightest weight for the loads to be supported, we may quote the case of the extensive use of Duralumin in the structure, steel being used only where there was a definite advantage in doing so. For example, the main longitudinals are girders composed of three steel tubes running fore and aft, forming a triangle, joined by struts and braced by cables. The transverse frames or "rings," on the other hand, have steel booms with Duralumin webs. The diagram on p. 1094 illustrates the general arrangement. In the diagram the intermediate longitudinals have been omitted, partly for the sake of clearness and partly because, as already mentioned, they are not a part of the main structure. The booms in the main longitudinals are of the Boulton and Paul "closed-joint" type, made from steel strip, formed into a tube and with the edges of the strip curled over each other inside the tube. Continuous heat treatment permitted of making up 75-ft. lengths of these tubes in a steel which enabled a proof stress as high as 65



This view shows the two forward engine cars, and also one of the triangular steam condensers of the cooling system. ("FLIGHT" Photo.)

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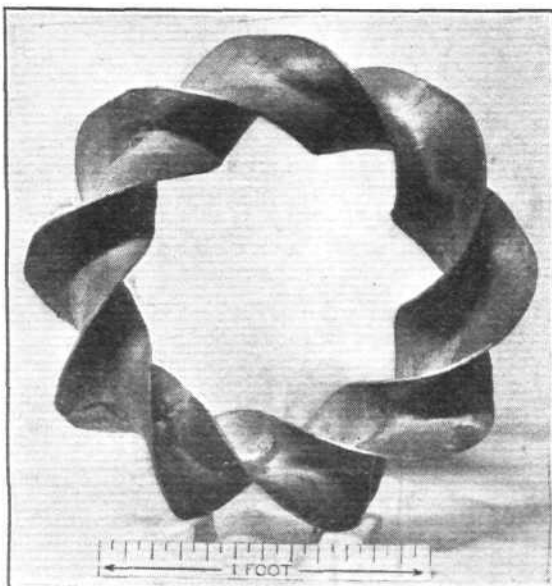
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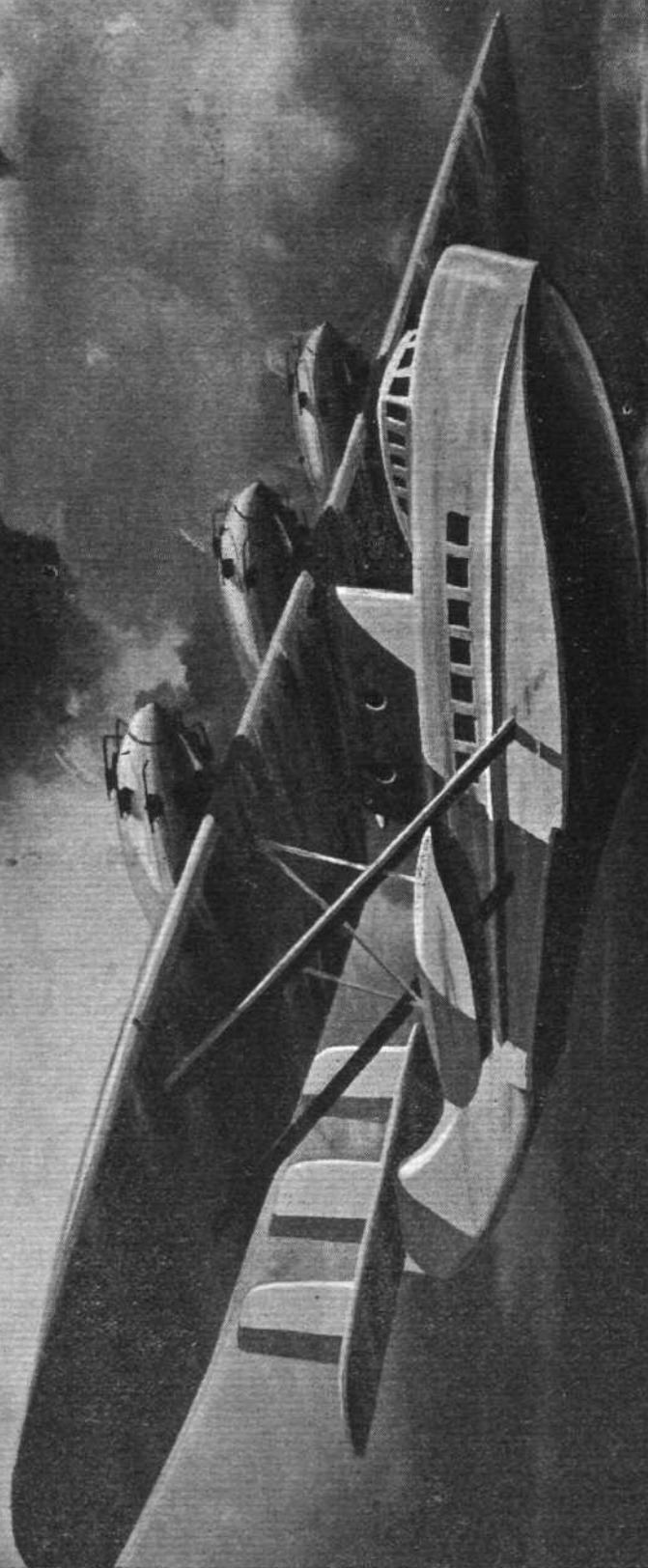
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The Dining Room of R.101 has very comfortable table and chair accommodation.
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tons/sq. in. and an ultimate stress of 88-95 tons/sq. in. to be developed. Solid tubes of such lengths and wall thicknesses, to give as high stresses, would not have been practicable. In the transverse frames the steel booms are of “bulb section,” owing to the manner in which the Duralumin webs are fitted into them.

The form of construction briefly outlined above is used from frame 3 to frame 12, inclusive. In the extreme nose and extreme tail of the hull a form of construction resembling more the normal Zeppelin has been employed.

Gas Bags

Closely associated with the choice of the rigid type of transverse frame is the type of gas bag used and the method of its wiring. In the Zeppelin type of construction the radial wires of the transverse frames form bulkheads between adjacent gas bags and prevent “surging” of the gas when the airship is pitched nose up or nose down. In R.101 the gas bags themselves are of a different form, known as the “parachute” type, and their wiring is necessarily also quite different. Without a number of illustrations it is difficult to convey in words the arrangement of this wiring, but briefly it consists in a disposition whereby the lift of the gas bag is transmitted not to the longitudinal girders, which would cause a lateral load on these, but to the points of intersection of longitudinals and frames. Thus the loads are changed into compression loads in the longitudinals. There are 16 gas bags.

Gas valves of an entirely novel type are used, designed to act as combined automatic and manœuvring valves. That is to say, they will automatically relieve the pressure in the gas bags when these become full, or they can be operated by the captain from the control car to release gas, even when the bags are not full. The size of valve area is sometimes very important, such as, for example, when an airship gets into an air current rising very rapidly. In R.101 the valve area is such as to be capable of dealing with a rise of no less than 4,000 ft. per minute.

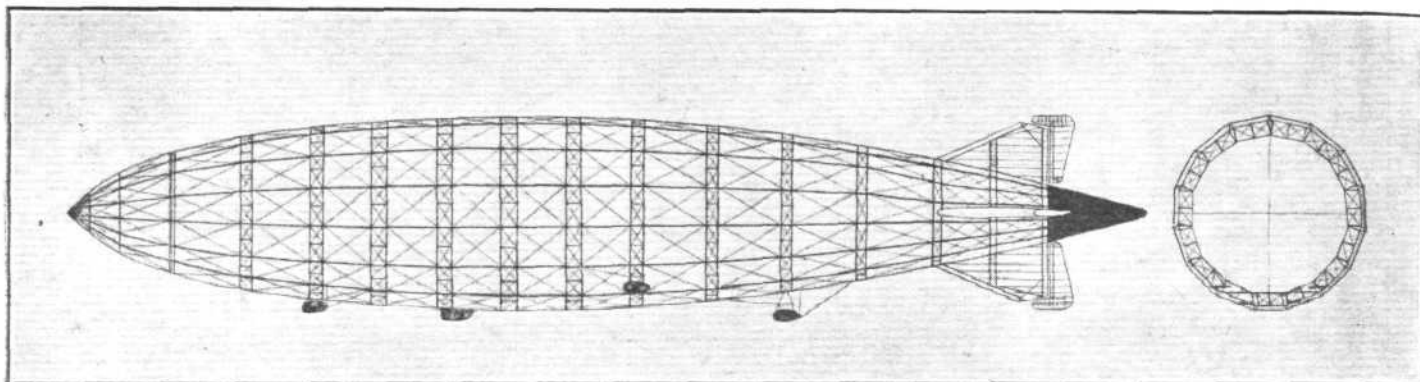
The Fuel System

The special heavy-oil fuel for the Beardmore “Tornado” engines is carried in a number of cylindrical tanks housed in the transverse frames. Each tank has a capacity of 224 gallons (equivalent to 1,870 lbs. of the special fuel oil) except in a few special positions, where tanks of half this capacity are fitted. Certain of the fuel tanks are fitted with special aluminium discs and a special cutter, which enables

the disc to be cut, thus releasing the fuel in an emergency. Pipe lines run through the length of the ship connecting up the various tanks and connecting them to special pressure tanks from which the fuel can be blown by compressed air to tanks in any part of the airship, thereby facilitating the feeding of the main engines and the trimming of the airship.



In this view from under the tail of R.101 the aft openings of the internal air pressure system are clearly seen. (“FLIGHT” Photo.)



In this diagrammatic Representation of R.101 the intermediate longitudinals have been omitted.

A certain number of tanks on the passenger decks are intended chiefly for providing compensating weights when the full complement of passengers is not being carried, but if desired they can be utilised for fuel to give a greater flying range. The normal fuel tanks have a capacity for nearly 29 tons of fuel, and by using the tanks on the passenger decks this can be increased to a little over 37 tons in all, or approximately 10,000 gallons.

The water ballast system includes ballast bags and ballast tanks. Between them they have a capacity of 15 tons, of which 7 tons is carried in the tanks, and may, if desired, be replaced by fuel if it be found that the whole 15 tons of ballast is not necessary. The water in the tanks can be transferred, like the fuel oil, from one part of the airship to another by compressed air. If no passengers are carried, and all available tanks are filled with fuel, including those normally of the water ballast system, the total supply available becomes about 44 tons.

The Power Plant

Originally it was the intention that both R.100 and R.101 should be fitted with Beardmore heavy-oil compression-ignition engines. During the development of these engines, however, a certain amount of trouble was encountered, due to a period of resonance developing at an engine speed of slightly over 900 r.p.m. By using spring couplings between the crankshaft and propeller, and damper flywheels, the trouble was overcome, the critical speed being thereby brought well below the running range. Delays were, however, unavoidable, and Commander Burney and his company decided not to wait for the Beardmore engines for R.100, but to use petrol engines instead. Later on it will be quite feasible, if desired, to substitute compression-ignition engines. In R.101, on the other hand, it was decided that in view of the undoubted advantages of the heavy-oil engine, the original plan be adhered to, and Beardmore "Tornado" engines are actually fitted.

Originally it had been expected that the Beardmore engines would develop 700 b.h.p. at 1,000 r.p.m. This has not been found possible with the existing engines, and the engines are now to develop a continuous full power of 585 b.h.p., with a short-period maximum of 650 b.h.p. As there are five engines in all, the total continuous full power available would have been 2,925 b.h.p. Again, however, difficulties have arisen. This time not with the engines but with the variable pitch propellers. These were designed with the object in view of being able to give a reverse, such as for checking speed when coming up to the mooring mast, etc. Presumably because the development of the variable pitch airscrews has taken longer than expected, R.101 has been fitted provisionally with wooden propellers, and the reverse has had to be obtained by putting the airscrew of one of the five engines (the port, forward one) on "front to back," i.e., giving forward thrust. This, unfortunately, means that the engine cannot be used for giving rearward thrust, and thus is a "passenger" except for a few minutes at a time. One result obviously must be that the maximum forward speed of the airship will be reduced, not only because of the deletion of one power unit (as far as forward thrust is concerned), but also because the continuous full power is less than the airship was originally designed for. The original designed top speed was about 80 m.p.h., but it is now estimated that with the power available this figure will be reduced to about 70 m.p.h., with a cruising speed of something like 63 m.p.h. It is to be assumed that with but four engines running, the range for a given quantity of fuel will be somewhat increased at the lower cruising speed, but here head winds enter into the calculations

to a marked extent. It is customary, we believe, to base estimates of range upon a head wind of 15 m.p.h., and if the cruising speed in still air is found to be the estimated one of 63 m.p.h., the average speed made good over the ground will be reduced to 48 m.p.h. This may handicap the airship not a little as regards her general utility, but one should, we think, regard this as being merely a temporary set-back which does not greatly affect the technical value of the airship. There is very little doubt that considerable improvement in the engines can and will be made. This may take the form of lighter engines for the same power, or more powerful engines for the same weight, and in the meantime the existing engines and propellers will serve a very useful purpose in enabling us to begin flying tests. While these will be no criterion as to what the airship will ultimately do in the way of performance and useful load, they will at any rate enable us to test out the general design and structure of R.101, and give invaluable information concerning the heavy-oil engines under actual working conditions.

The "Tornado" engines are carried in five exactly similar engine cars, of which two are placed forward, a slight distance outboard, two a little abaft of midships, and further out from the centre line, while the fifth car is placed aft, on the centre line. It might have been thought logical to use this central engine for the reverse, but it was desired to retain this engine for forward thrust in order to get the slipstream of its propeller on to the tail surfaces for manoeuvring purposes. Consequently the port forward engine is at present used for reverse. In each engine car there is a small (40 h.p.) auxiliary petrol engine for starting the main engine. The petrol tank for the

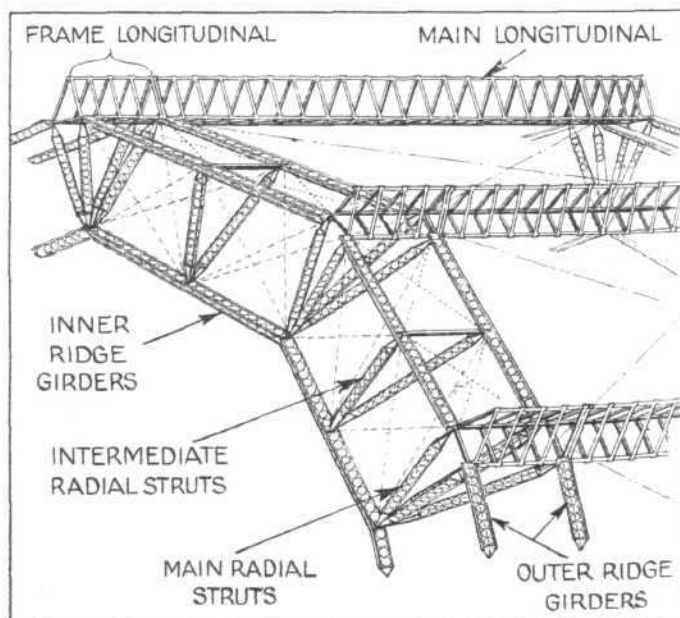
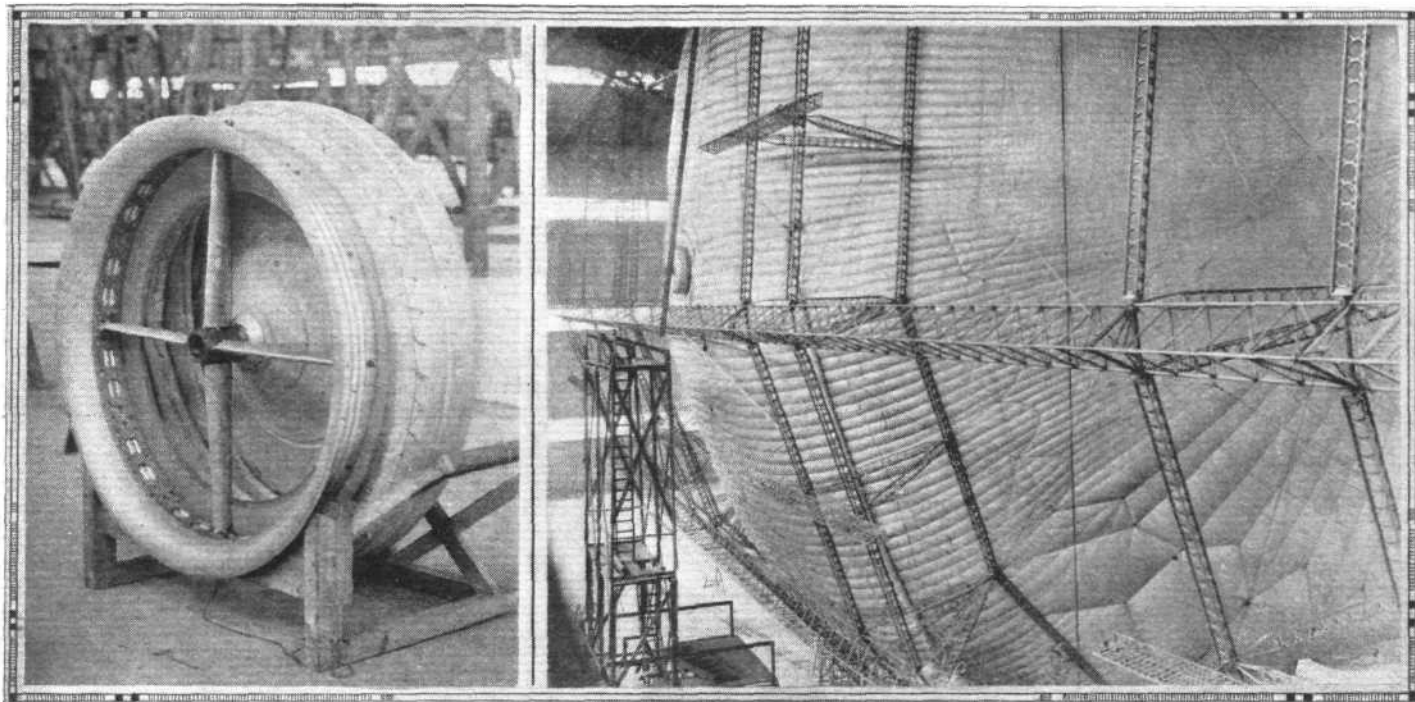


Diagram of the main structural members of the framework of R.101. The intermediate longitudinals are not shown. They occur midway between the main longitudinals, and are secured to the outer ridge girders in such a way, by a screw thread arrangement, that they can be displaced radially outwards, and thus take up any slack developed in the outer cover or envelope.



SOME R.101 DETAILS : On the left one of the gas valves, and on the right a portion of the structure. The main longitudinals are seen in place, but of the intermediate longitudinals short lengths only were attached when this photograph was taken last year.

(“FLIGHT” Photos.)

auxiliary engine is so arranged that in case of a serious fire it can be dropped by the pulling of a lever, and thus any slight risk there might be, due to the carrying of small quantities of petrol, should be reduced to very small proportions indeed. The auxiliary engines start the main engines through a Bendix gear with a 20 to 1 reduction ratio. In two of the engine cars the auxiliary engine drives the air compressor used for transferring fuel from one part of the airship to another. In the other three engine cars electric generators are fitted instead of the air compressors. These generators are driven by the auxiliary engines when the airship is at rest, or cruising very slowly. When, however, the airspeed is sufficient, the auxiliary engines are stopped, and the generators are driven by constant-speed variable pitch windmills mounted in the nose of the three engine cars.

Although the engine cars are quite small, and of low drag there is sufficient room for the engineer to move about and attend to his engines. It would not, however, be practicable to hoist the engine out of its car and instal another. Instead provision has been made in the design for changing a complete car, and this operation, it is thought, will be quite feasible while the airship is on the mooring mast.

Steam cooling is employed, and the condenser serving two of the engines is retractably mounted in the bottom of the airship. When drawn into the hull this condenser serves to heat the passenger accommodation. The other engines are cooled by triangular condensers projecting from the sides of the hull.

Passenger Accommodation

The various difficulties encountered, and to which reference has been made above, have resulted in the passenger-carrying capacity of R.101 being somewhat reduced, and at present it is only intended to provide accommodation for about 50 passengers. The accommodation is located on two decks in the bottom portions of bays 6-7 and 7-8. The upper deck has an area (exclusive of the promenades) of 5,550 sq. ft. The lower deck has an area of 1,730 sq. ft., which can be increased later, if found necessary, to some 4,000 sq. ft. by means of side wing decks.

The upper deck carries a large lounge with promenades on each side. These promenades have glass windows in the outer cover. On this deck, also, there is a dining room with accommodation for up to 50 passengers, and a number of two-berth cabins.

The lower deck carries the captain's control room, below which is the control car. There is open communication between the control room and the control car. A separate wireless cabin adjoins the control room. Also on the lower deck is the electric kitchen, and a small lift operates between the kitchen and the dining room on the upper deck.

Passengers will enter the airship through a hinged gangway near the extreme nose, which will communicate with the gallery of the mooring mast. As the gangway is covered with fabric on the sides, the passengers will not obtain a view of the ground while going on board, and thus there should be no risk of attacks of giddiness. From the gangway a corridor runs the whole length of the airship, along one of the bottom longitudinals. This corridor has a plywood floor, and its sides are covered with fabric, so that only here and there does one get a glimpse of the interior of the hull framework, gas bags, etc.

In transverse frame No. 5 there is access, by means of ladders and stairways, to a cockpit in the top of the airship. In several of the transverse frames ladders and stairways are provided up to the mid-height longitudinal. Along this longitudinal, on each side of the ship, members of the crew can walk, between the outer cover and the gas bags, for the purpose of inspecting the gas valves, which are situated at mid-height.

Ventilation of the air space between the outer cover and gas bags is obtained by having circular holes around the nose and stern, and with a laced joint around the circumference approximately at the maximum cross-section. The nose and tail holes are air pressure inlets, while the laced joint amidships is the air outlet. In addition to providing ventilation, this air pressure system is also designed to equalise the internal and external air pressure on the envelope. Along the ridge of the airship is a line of gas and air exhaust hoods.

Main Data of R.101

Full particulars of R.101 are not yet available. For example, the tare weight of the airship is not known, and thus it is difficult to estimate with any degree of accuracy the useful load, range, etc. In any case, these figures will depend very largely upon the fuel consumption of the engines, which cannot be definitely known until actual flying tests with consumption measurements have been made. Bench tests indicate a specific fuel consumption, at continuous full power speed, of 0.385 lb./h.p./hour.

The overall length of R.101 is 732 ft., and the maximum diameter is 132 ft. The height, including the control car, is 140 ft. The gas capacity is approximately 5,000,000 cub. ft., and assuming a lift of 67.25 lb./cub. ft., this should give a gross lift of approximately 150 tons.

The normal fuel capacity is about 29 tons. If the weight-compensating tanks on the passenger decks are taken into use as fuel tanks, this figure is increased to more than 37 tons, and, finally, if the water ballast tanks are found not to be required for ballast, but are taken into use as fuel tanks, the capacity rises to a total of 44 tons.

AIRISMS FROM THE FOUR WINDS.

Sir Alan Cobham's Tour Ended

SIR ALAN COBHAM concluded his tour of Britain, on the D.H. "Giant Moth" *Youth of Britain*, when he returned to Stag Lane Aerodrome on October 7. He was officially welcomed by Mr. F. Montague, Under-Secretary of State for Air, while Sir Charles Wakefield, the donor of free flights to 10,000 school children during the tour, and Sir Sefton Brancker, Director of Civil Aviation, were also present to receive him. Sir Alan has flown altogether some 60,000 miles during this "make-the-nation-air-minded" campaign, and has visited 110 towns. Over 40,000 passengers have been carried and about 4,000 separate flights made during the 21 weeks' tour. Throughout this period the Armstrong-Siddeley "Jaguar" engine has run for 760 hours without a falter—some 50,000 miles had been covered without a complete overhaul. At the conclusion of the formal welcome at Stag Lane, Sir Alan took up the last batch of school children for their free flights.

Sydney-Perth Air Race

DE HAVILLAND machines put up a good showing in the Sydney-Perth (East-West) Air Race, which was held on September 30-October 5. Fastest time was made by Maj. de Havilland, flying a special single-seater "Gipsy-Moth," who averaged 107 m.p.h. over the 2,450 miles, while a D.H. 50 came in second, and a D.H. 9 third. The handicap was won by Capt. Miller, on a D.H. 9, while Maj. de Havilland was second, with third, fourth and fifth places secured by other "Gipsy-Moths." In spite of severe wind, rain and dust storms, ten "Gipsy-Moths" started, and nine finished. A "Moth" piloted by Mr. C. D. Pratt (with Mr. J. R. Guthrie as passenger) struck a tree near Baandee and crashed, both men were badly injured, but are making a good recovery.

The French Long-Distance Record

THE rumours prevalent for the past week that the French airmen, Diedonne Coste and Maurice Bellonte had landed in a sparsely settled portion of Siberia, were verified officially last Sunday by the French Air Ministry. The French Consul at Mukden telegraphed that Coste had made a safe landing, September 29 last, in the neighbourhood of Tsitsikar, a town in Manchuria. The distance from Paris is about 8,000 kms. (5,000 miles) in a straight line. The French airmen have thus bettered the long-distance record, as they set out to

do from Le Bourget, on September 27, flying the Breguet long-distance plane, "Question Mark." The present record of 7,188 kms. (4,500 miles) was made last year by the Italian airmen, Ferrarin and Delprete, and has been made the object of a number of attempts, all of which, up till this time, have failed.

"Land of the Soviets"

THE Russian aeroplane, "Land of the Soviets," which is attempting a flight from Moscow to New York via Siberia, left Sitka, Alaska, for Seattle early on October 4, but failed to arrive there according to schedule. U.S. Coastguard cutters were ordered to make a search for the machine, which might possibly have landed in one of the bays in South Alaska or British Columbia. Up to the time of going to press no further news has come to hand and it is feared that the machine is lost.

Lady Heath Recovering

LADY HEATH, who met with a serious accident last August, is making good progress, and is now able to walk about the hospital.

A Rohrbach Romar for France

THE French Government has placed an order on reparation account for a Rohrbach-Romar flying-boat, similar to the type ordered by the Deutsche Lufthansa for eventual use on an Atlantic service via South America.

New Solo Endurance Record

IT is reported that Mr. Vern Speich has established a new world's solo non-fuelling endurance record at Long Beach, California, of 38 hrs. 48 secs.—the previous record being 36 hrs. 58 mins. 36 secs.

Another London-Cape Town-London Flight

WE learn from the Phillips and Powis School of Flying (Reading) that they have received an order from Mr. F. Roy Tuckett, of South Africa—who learnt to fly at the Port Elizabeth Light Aeroplane Club—for a D.H. "Gipsy Moth," fitted with special tanks, for his flight from London to Cape Town and back, which he proposes to make early next month. He will endeavour to do the trip in record time, and careful preparations are being made for the flight.

Air Force for Hedjaz

KING IBN SAUD is negotiating for the engagement of six British pilots to form an Air Force in the Hedjaz.

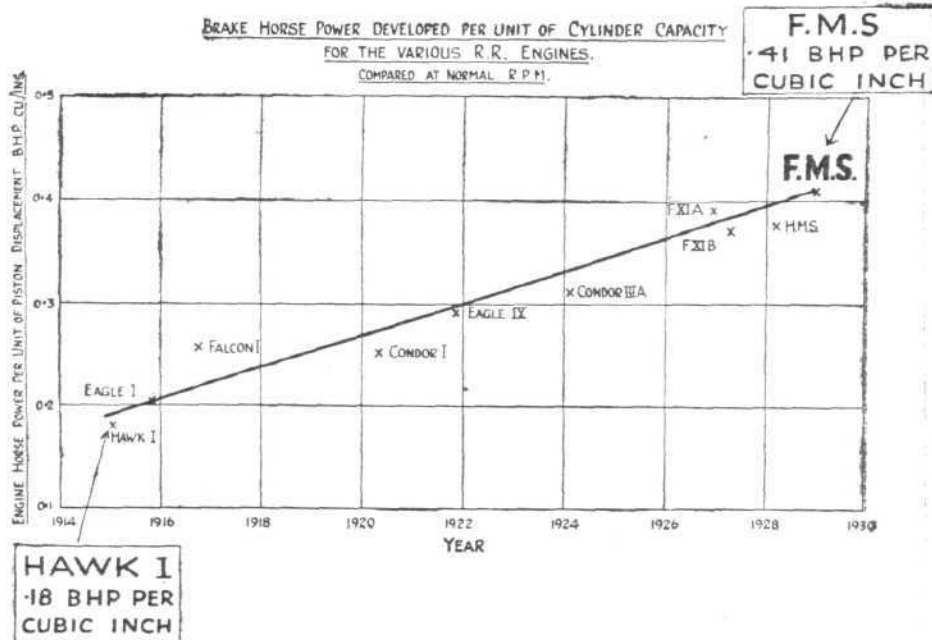


THE WIRELESS "MOTH": This D.H. "Moth," belonging to Air Work, Ltd., has been equipped with an Amplion Wireless Receiving Installation intended for Private Owners' machines. Air Work, Ltd., it should be mentioned, are shortly broadcasting weather reports from Heston to Private Owners, and it is for such purposes that this receiving set has been designed. ("FLIGHT" Photo.)

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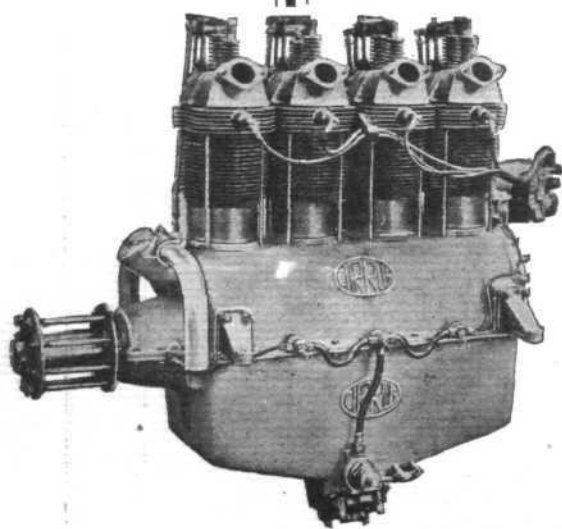


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important CHALLENGE CUPS mentioned
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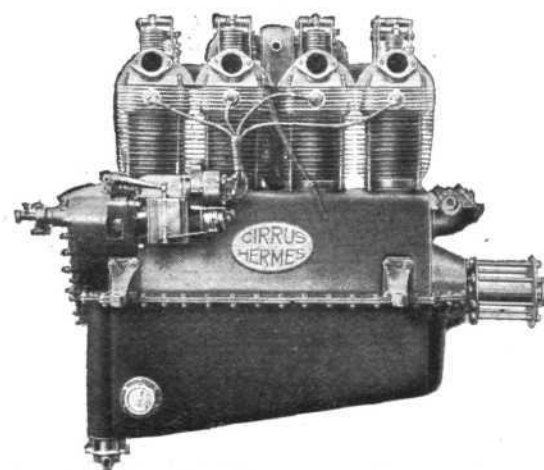
On Friday, 5th October, the races for the above took place, and resulted in a win by Cirrus-engined aircraft as follows:—

G. S. KEMP	CIRRUS-MOTH
Dr. H. L. B. DIXON	CIRRUS-MOTH
A. GOODFELLOW	CIRRUS-AVIAN
W. L. RUNCIMAN	CIRRUS-SPARTAN
N. S. TODD	CIRRUS-MOTH
F/O. S. A. THORN	CIRRUS-AVIAN
Dr. H. L. B. DIXON	CIRRUS-MOTH
D. WILSON	CIRRUS-MOTH

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HANWORTH : The Club House viewed from the grounds. ("FLIGHT" Photo.)

HANWORTH PARK

THE new London Air Park which has been started at Hanworth Park by National Flying Services, Ltd., is in an exceedingly historical position. Hanworth Park was for some time one of the resorts of Henry VIII, and much of the gardens are still as "Good Queen Bess" laid them out. About the middle of the sixteenth century the Manor of Hanworth was granted to Anne Duchess of Somerset, the mother of the Earl of Hertford.

In 1627 Hanworth became the property of Sir Francis Cottington, who afterwards became Baron Cottington. In 1797 a fire destroyed the old house, and this was rebuilt in 1799 by Mr. Henry Perkins, of Barclay Perkins. After various owners we come down to the present day, and during the war it was used as a hospital and an aircraft factory was established on the property.

Its position is an ideal one for the purpose it is now used, and the combination of its old house and delightful grounds make it the Country Flying Club *par excellence*, while at the same time retaining the amenities consequent on its proximity to London. Many bus services pass close to the Air Park, and Feltham Station is only a few minutes' walk.

The Park itself is about 230 acres in extent, and is somewhat unique by being, in this country, the first aerodrome to have the club house and hangars situated in the middle, with the landing ground extending in all directions around it. A run of 1,000 yards is provided for with any direction of the wind, and the natural formation of the ground lends itself to a division of the landing space. Under this division the area on the north side will be called the London Air Park, and will be used for commercial flying, while that on the south side will bear the name Hanworth, and will be reserved for private flying. Hangars and fuel supply

pumps have been built on both sides to cater for their respective users, and on the club side private lock-ups are also being provided.

The mansion has been re-decorated and luxuriously fitted out as a club house, and the accommodation includes a ball room, writing room, dining room, drawing room, bar, lounges, dressing rooms and fourteen bedrooms. Excellent catering service has been arranged, and nearly 1,000 meals were served to members during the first fortnight since opening.

The gardens are particularly attractive, and the walled kitchen garden has been turned into hard tennis courts; grass courts and squash racket courts are also being provided.

The original conception of National Flying Services allowed for the construction of 71 flying stations; these will be 10 provincial air parks and 60 intermediate landing grounds. Several of the provincial parks are now in the course of construction, and it is hoped that by next spring the general programme will be well advanced. At Reading and Hull the provincial type club house is being erected and flying instruction has already commenced.

The Yorkshire and Nottingham Clubs have amalgamated with N.F.S., and the preliminary arrangements settled. At Stoke-on-Trent negotiations are in progress with the local authorities for leasing a site which has been purchased as a Municipal Aerodrome. Belfast Aero Club is another club which is combining with N.F.S. as soon as arrangements can be made. The survey work necessary for establishing the intermediate landing grounds is being carried out, and it is hoped that by next spring there will be in existence a widespread organisation of ground facilities throughout the country. The ideal being aimed at is to have no town of any importance which cannot be conveniently reached by air, and to have



HANWORTH : Interior view of the drawing-room of the N.F.S. Club House.



HANWORTH : An aerial view of the N.F.S. aerodromes, which surround the Club House. The N.F.S. "Circus" may be observed flying overhead in the top right-hand corner. ("FLIGHT" Photo.)

flying grounds all over the country at about fifteen minutes' flying away from each other.

Exceptional facilities are being provided for members who own their own machines, and they will have lock-up garages and the assistance of the maintenance and repair organisation. Hire-purchase terms, special insurance rates, and maintenance contracts are other ways in which their needs will be catered for. The company are also undertaking the purchase and sale of second-hand aircraft. Such things as air taxis have not been forgotten, and machines are available

at 1s. a mile for one passenger and 1s. 6d. for two passengers. For this latter work Desoutter cabin machines are being bought, which should make this form of travel more popular than hitherto owing to the extra comfort of the enclosed cabin. Arrangements are also being made whereby passengers arriving at Croydon by air who wish to proceed at once to some provincial destination will be met and taken straight on by one of the company's machines. Trial flying lessons or short flights can be arranged at various rates, according to the length of the flight.

Membership of Hanworth Club will be divided into flying and non-flying members, and the entrance fee and subscription being £5 5s. and £3 3s. respectively. These rates, however, are only to apply to the first 250 members, after which they will be raised, and this number is already almost complete.

The rates for instructing and flying are very low, being £2 per hour for dual instruction and £1 15s. per hour for solo training, so that the ordinary individual should be able to get his "A" licence at an approximate cost of £25. A "Fly yourself" hire system has also been instituted whereby members can hire club aircraft at rates which start at 30s. per hour and go down to 21s., according to the amount of flying done.

The staff is rapidly increasing as the need for more instructors grows, and at present there are 16 pilots at work. Capt. N. Stack, A.F.C., is the chief pilot and air superintendent and is responsible for the whole of the flying organisation. Capt. the Hon. J. B. Rodney, M.C., is manager of the London Air Park. Flight-Lieut. H. M. Schofield, pilot in charge of flying at London Air Park; Capt. H. T. Talbot-Lehmann, M.C., pilot in charge of sales department. Flight-Lieut. J. B. Wilson, Flight-Lieut. M. H. Findlay, D.S.C., D.F.C., Flight-Lieut. I. W. Mackenzie, Flight-Lieut. W. A. Andrews, Flying Officer A. H. Alliott, Flying Officer J. J. Flynn, Flying Officer A. D. Page, M.M., Flying Officer L. A. Eggesfield, Capt. F. S. Crossley, Flight-Lieut. A. J. Styran,



HANWORTH : An interior view of the comfortable lounge of the N.F.S. Club House. ("FLIGHT" Photo.)

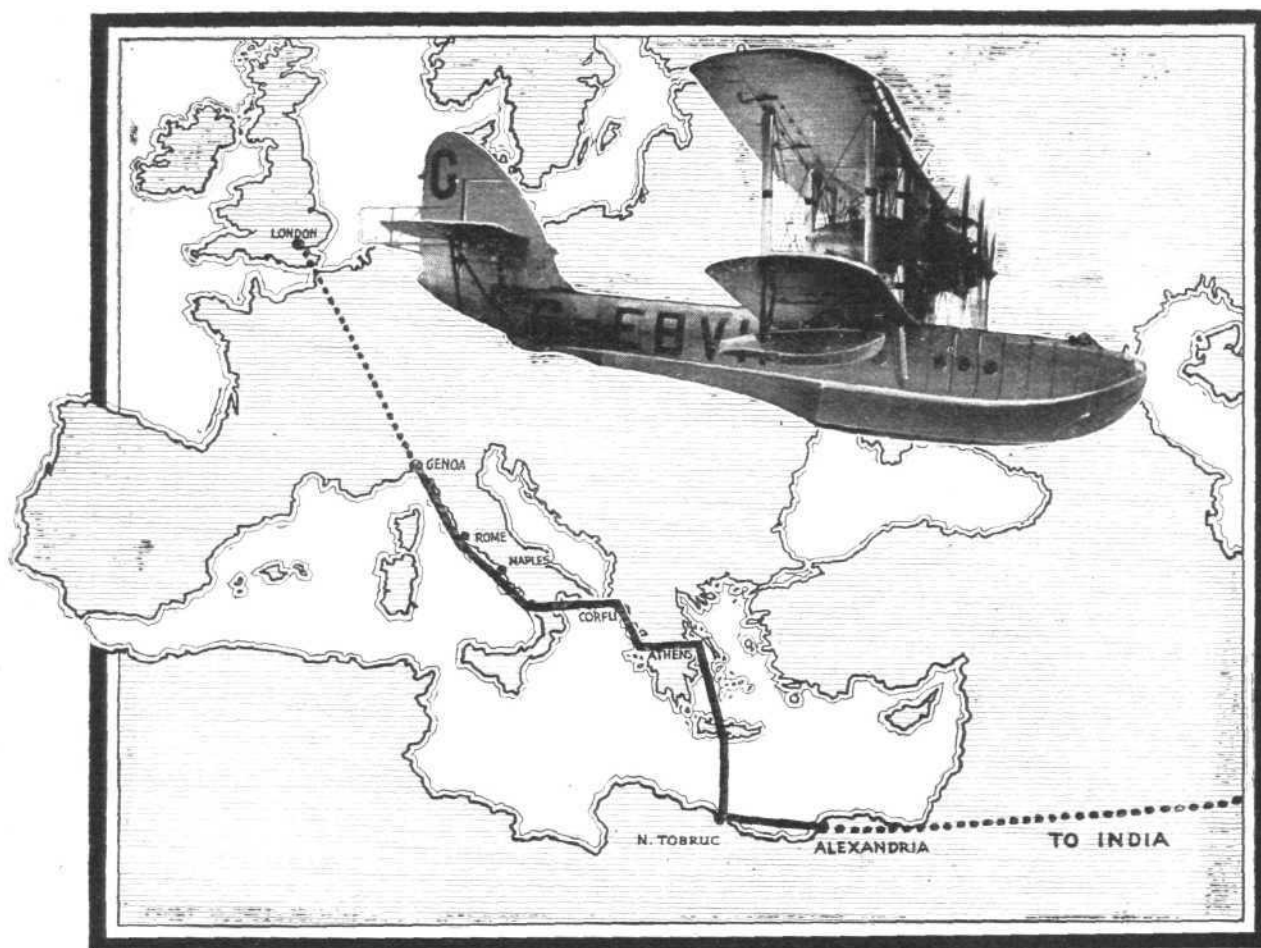
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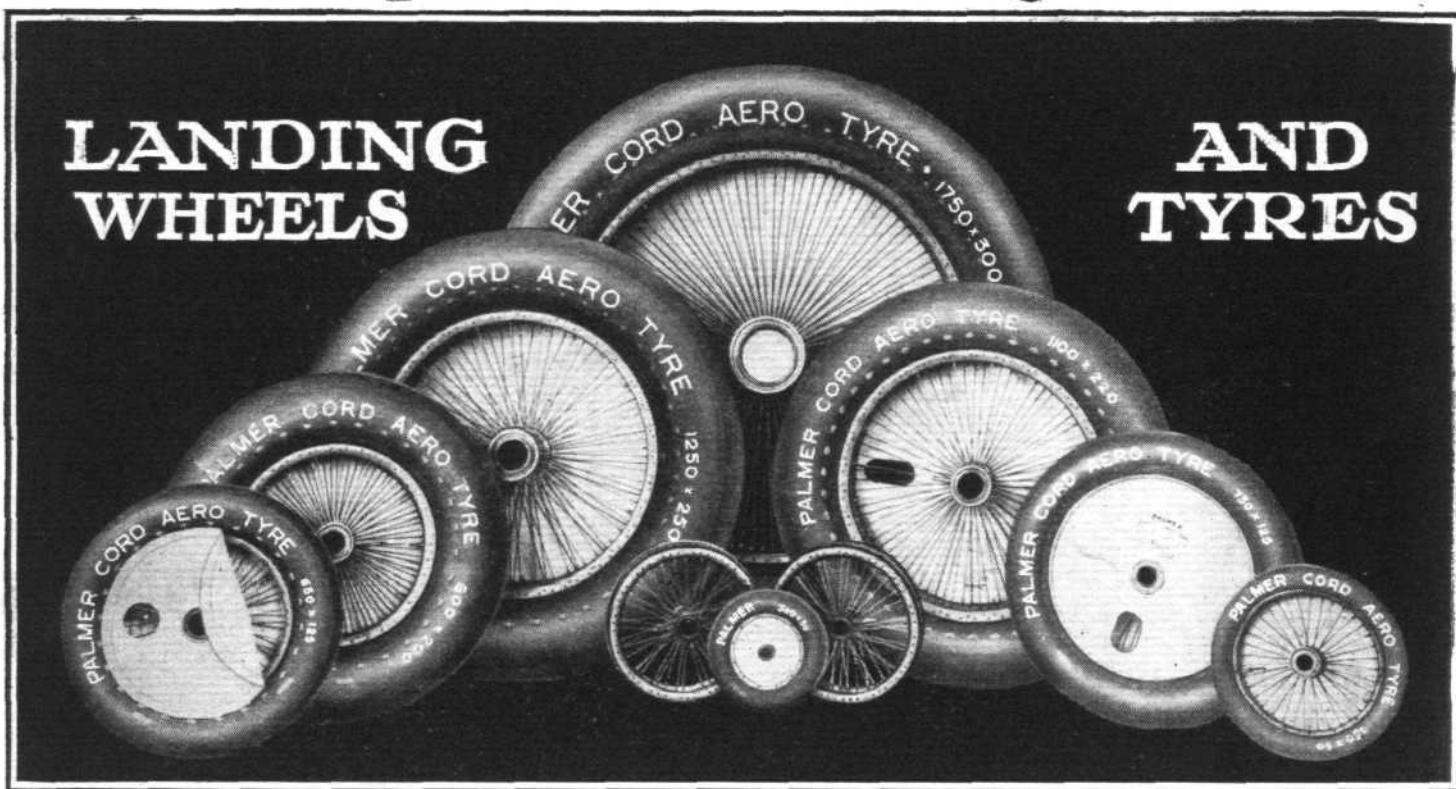


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"	195	111.12	25.4	Central	"	179	178	44.45	Central	"	149	220	80	Central
300x60	16	111.12	25.4	Central	650x125	119	178	55	132/46	"	155	185	55	Central
450x60	30	89	31.75	Central	"	147	178	55	Central	900x200	107	185	55	Central
"	172	130	38.09	Central	"	188	120	34.92	Central	"	108	185	55	Central
575x60	21	160	28	Central	"	336	178	44.45	132/46	"	128	220	66.67	Central
"	180	150	38.09	104/46	750x125	77	178	44.45	132/46	"	137	250	80	Central
"	186	120	34.92	Central	"	92	185	55	135/50	"	157	185	80	Central
"	190	150	38.09	Central	"	95	185	55	Central	"	202	185	60.32	Central
600x75	21	160	28	Central	"	99	178	38.89	132/46	1100x220	134	220	66.67	Central
"	180	150	38.09	104/46	"	112	150	38.09	Central	"	136	250	80	Central
"	186	120	34.92	Central	"	176	178	44.45	Central	975x225	192	185	60.32	Central
"	190	150	38.09	Central	"	179	178	55	132/46	"	194	185	55	Central
700x75	78	178	44.45	132/46	800x150	161*	185	55	135/50	1100x250	364	220	60.32	Central
"	79	178	44.45	Central	"	162*	185	55	Central	1250x250	314	250	80	Central
"	100	178	38.09	132/46	"	163*	185	66.67	135/50	"	154	304.8	101.6	Central
"	101	178	31.75	132/46	"	169†	185	55	135/50	1500x300	305	304.8	152.4	Central
"	196	178	55	Central	"	177	185	55	135/50	"	306	304.8	101.6	Central
600x100	188	120	34.92	Central	"	183	185	55	Central	1525x325	197	304.8	101.6	Central
"	304	150	38.09	104/46	"	211*	185	60.32	135/50	1750x300	139	400	152.4	Central
"	333	120	34.92	Central	1000x150	167	185	55	125/80	"	191	350	150.3	Central
700x100	77	178	44.45	132/46	"	174	250	80	Central	1750x350	193	400	125	Central
"	92	185	55	135/50	"	182	185	55	Central	2000x450	363	500	152.4	Central
"	95	185	55	Central	"	187	220	66.67	Central					
"	99	178	38.89	132/46	"	201	185	60.32	125/60					
"	112	150	38.09	Central	"	210	185	60.32	Central					

* Wheels Nos. 161, 162, 163, and 211 are of stronger type than the other wheels for 800 x 150 tyres. † Wheel No. 169 is fitted with Ball Bearings. Grease gun equipment is now a standard fitting on all wheels.

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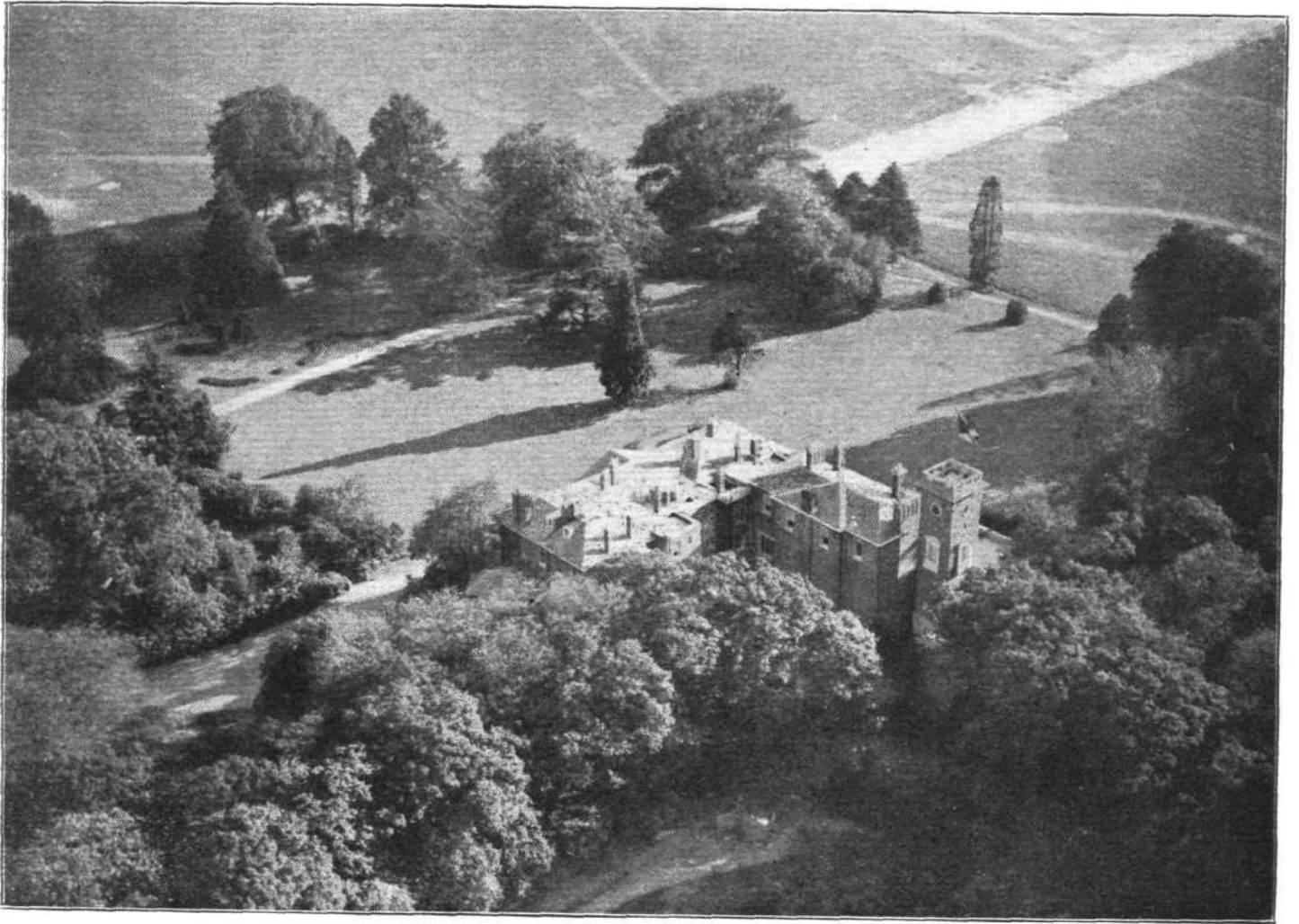
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HANWORTH : The Club House and Grounds as seen from the air. The Cardinal River, seen in the foreground is led underground where it crosses the aerodrome. ("FLIGHT" Photo.)

M.C., A.F.C., are instructors. Capt. C. A. Pennington is pilot-in-charge at Reading. Flying Officer R. T. Shepherd is pilot-in-charge at Nottingham. Capt. E. D. Ayre is pilot-in-charge at Hull.

The results for the first fortnight's work at Hanworth show that the company have provided something which was definitely needed, as they have not been able to cope with the rush of pupils, all machines and instructors have been kept working to their full capacity. Over 100 flying members have begun their instruction; 17 members have gone "solo," and nine have qualified for their "A" licences.

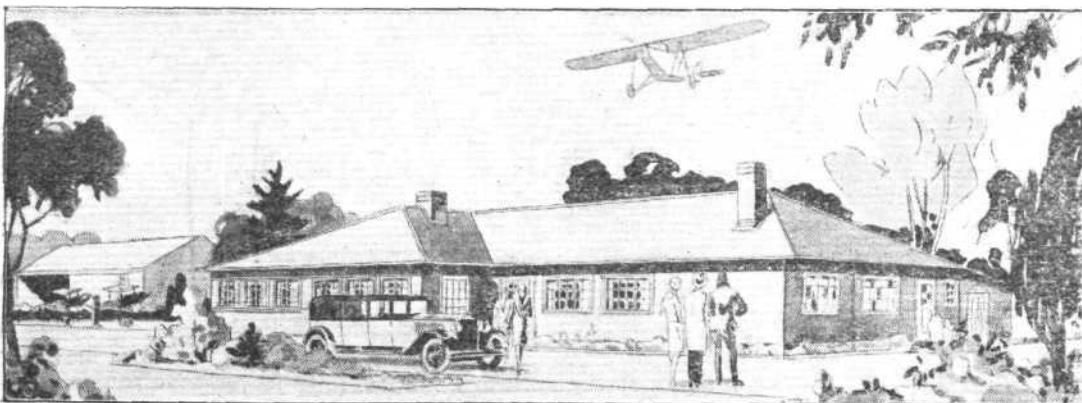
Three hundred and sixty-eight hours' flying time was put in in the first 15 days, and eight instructional machines have been kept busy.

Apart from instruction, over 4,000 miles have been flown on taxi work, which is rather surprising as the company has

made no effort to get this sort of work yet because the Desoutter cabin machines are not at present available.

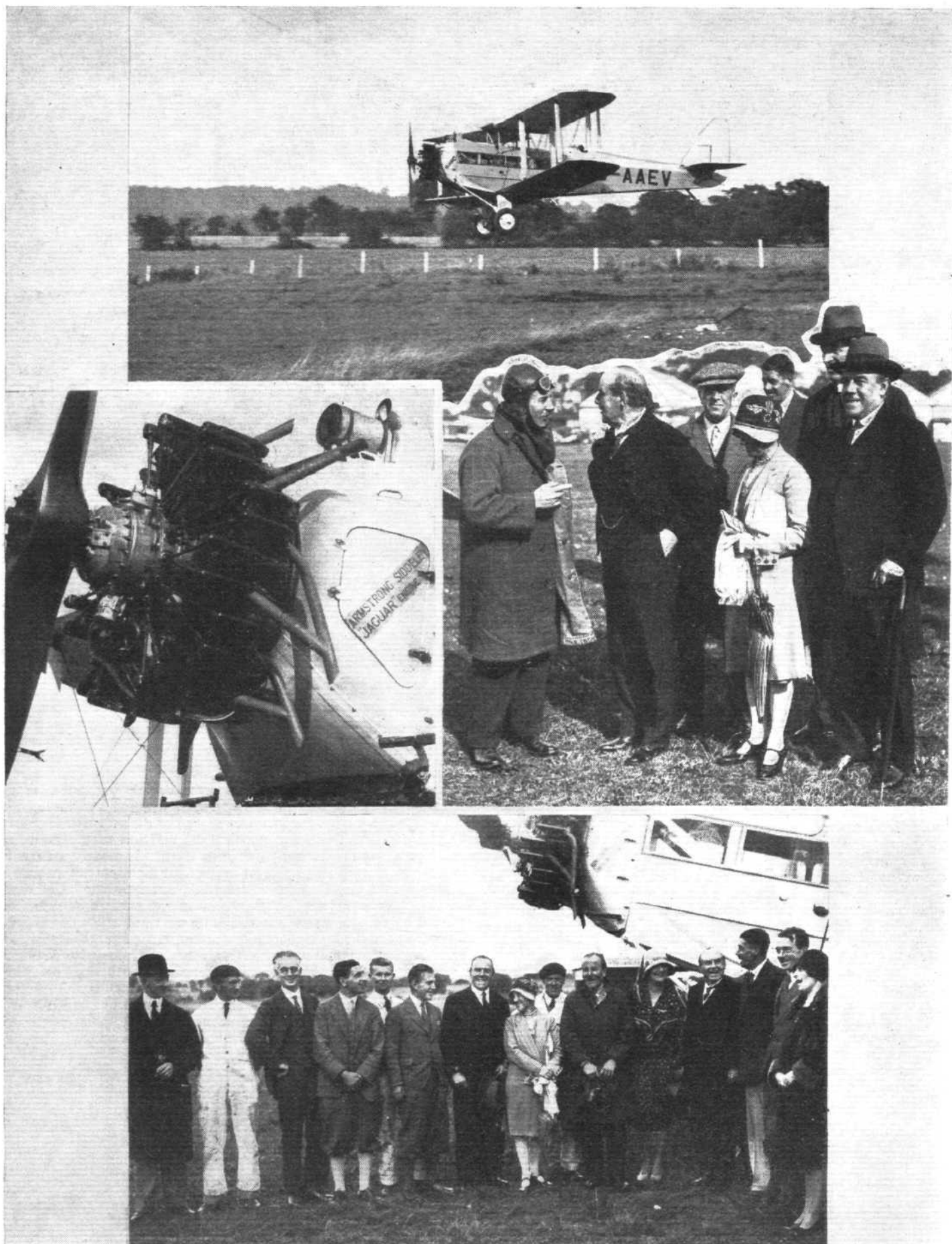
Several members are living at the club, and are thus able to put in several hours' flying daily. The south aerodrome, which is being reserved for club flying, is nearly ready for use; the club hangar and petrol-filling stations are completed, and when the levelling has been finished the north aerodrome will be kept for commercial work entirely.

Capt. Guest's African trip will be for the purpose of inaugurating taxi services between the centres of population. An office will first be opened at Nairobi, and when the Cape-to-Cairo air route is working these services will bring passengers to the main stations from the outlying districts, and should thus help to popularise the main service and at the same time considerably help settlers and others in getting about the country in a minimum of time.



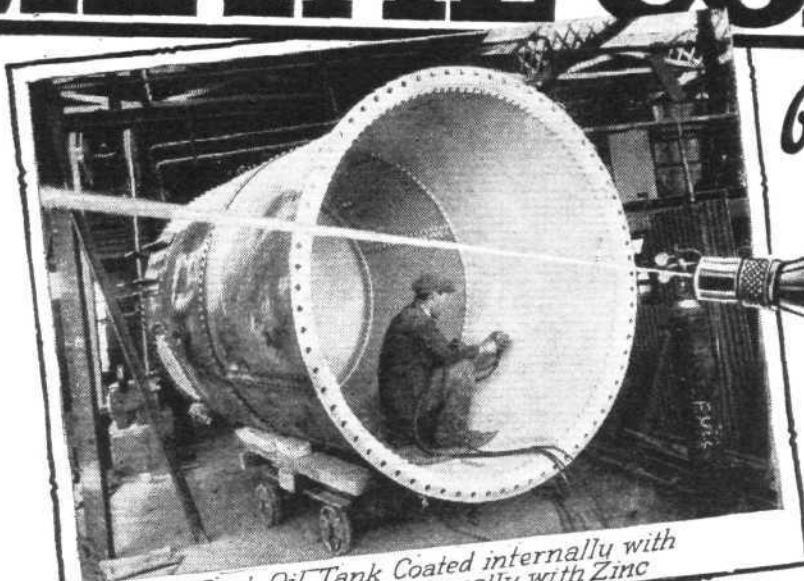
Sketch of one of the "Standard" Provincial Club Houses of N.F.S.

COBHAM'S TOUR ENDED



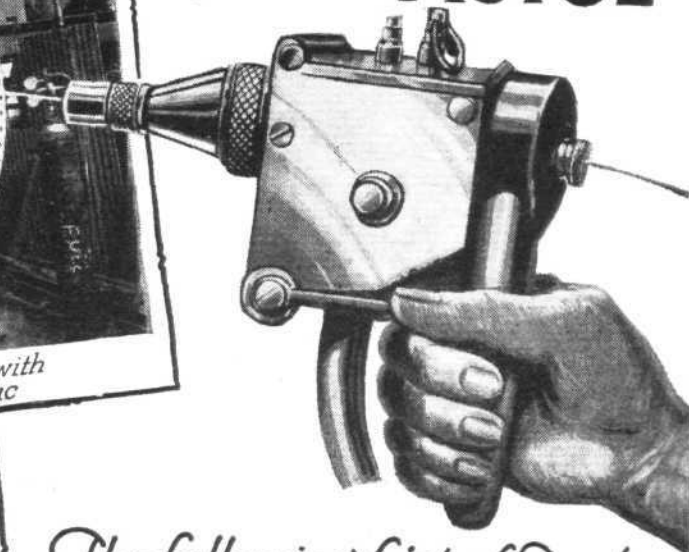
In the top picture Sir Alan Cobham is seen landing the D.H. "Giant Moth," *Youth of Britain*, at Stag Lane on October 7, at the conclusion of his 21 weeks' tour of Britain. In the centre, left, is the Armstrong-Siddeley "Jaguar" which ran throughout without a falter, and on the right, Sir Alan being welcomed by Sir Charles Wakefield, Sir Sefton Brancker, Mrs. Montague, Sir Edmund Phipps, and Mr. Montague, Under-Secretary for Air. Below, with some of the staff of Alan Cobham Aviation, Ltd., from left to right.—Mr. Davies, Mr. Barber, Mr. Brown, Mr. Courtenay, Mr. Bonner, Mr. Castlemaine, Mr. Montague, Mrs. Montague, Mr. Hartman, Sir Alan, Lady Cobham, Sir Charles Wakefield, Mr. Eskill, Capt. Stewart, Miss Jackson. ("FLIGHT" Photos.)

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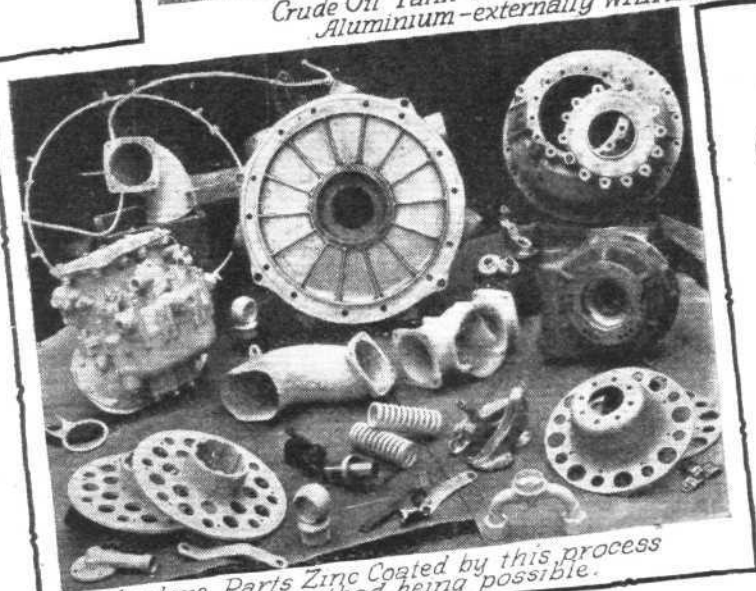


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Capt. H. S. Broad and his mechanic after the race



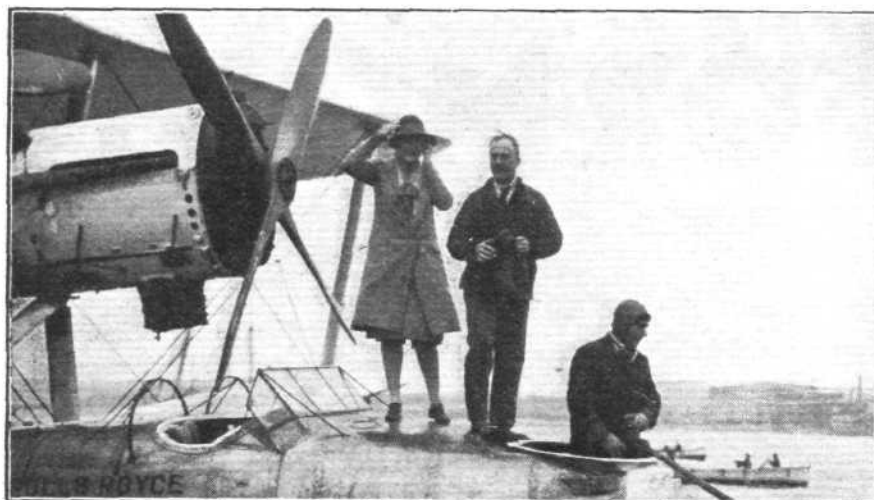
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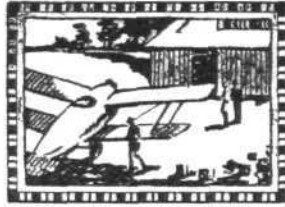
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Weybridge 705.

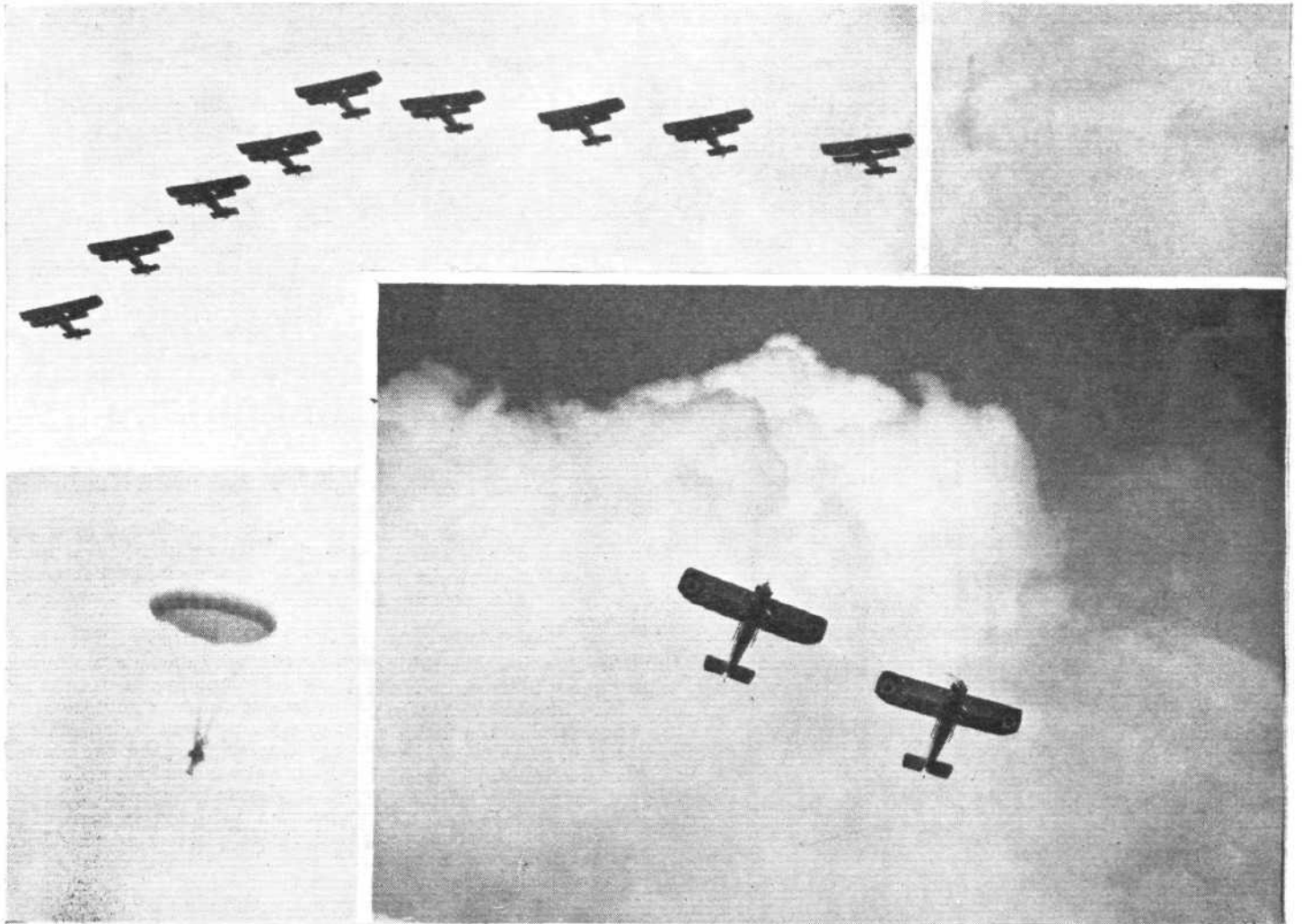
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SERVICE AND CIVIL ATTRACTIONS: At the top, No. 29 Sqdn., R.A.F. ("Siskins") are seen "forming," while below F./O. T. Clarke and Sergt.-Pilot T. W. Morton indulge in a simultaneous zoom. Inset, Mr. John Trnum descends in a new-type Russell Lobe parachute. ("FLIGHT" Photos.)

THE NEWCASTLE PAGEANT

THE glorious weather which we have almost come to expect for all meetings did not last for Cramlington, and throughout the meeting storms threatened. Those who came from the south found it extremely cold, and were constantly to be seen watching the proceedings from beneath certain canvas-roofed erections and invoking the aid of various forms of "artificial warmth."

Many of the competitors found the journey up a rough trip, and in one machine coming from the south the compass must have given up in disgust, because on landing to enquire their whereabouts the crew asked the direction of Newcastle, and received the reply, "I dinna ken, but Edinburgh's 17 miles o'er there!" Apart from those taking part in the races, visiting machines were not numerous, and considering the importance of the meeting, it was poorly supported by those who usually attend flying meetings. What it lacked in this direction was amply made up by the general public; they flocked to the aerodrome, and various estimates gave the total as between 16,000 and 20,000, apart from something approaching this number who ranged the surrounding hedges.

There can be no doubt about the air-mindedness of Newcastle, especially when one bears in mind that this is not their first meeting up here.

On Friday, several heats of the races were run off, and also the R.A.F. carried through a dress rehearsal of their part of the programme. Among the entries there was little in the way of special or new machines, and the only radical change was the Widgeon, belonging to Mr. Cazalet. He has joined the ranks of those seeking for higher speed through more power, and has had a "Hermes" installed, instead of the "Cirrus." The A.D. Co. have made a very nice job of the cowling, which blends pleasingly into the bottom line of the fuselage, where a curved fairing has been added to cover the part of the flying controls which project below the bottom of the fuselage. Two "Hermes-Avians" were there, one being the original one flown by Capt. Stack in the King's Cup race.

The programme on Saturday opened with the Air League Challenge Cup race, Mr. Jackaman, "J. Wellworth," and the Newcastle Club's third Moth were non-starters. There was much rejoicing by the Newcastle Club when it was seen, after the heats on Friday, that PT had been very leniently treated by the handicappers, and that, barring accidents, they stood an excellent chance of getting the "pot." PT is now, of course, an object of much suspicion. For the club to carry off all three cups with the same machine and to get second with other machines in two of them is a very fine

performance, whichever way you look at it, and when a machine that has had a lot of knocking about and has only a Mk. II Cirrus engine in it laps at 101 m.p.h., people at once adopt an uncharitable attitude, and wonder how it is done. The fact of the matter probably is that she has been really well looked to by someone who knows his job, and has done it thoroughly, so thoroughly that there is little chance of her speed being underestimated by those extremely hard-working but much-maligned individuals known collectively as the handicappers.

Capt. Broad having failed to arrive, he could not give his aerobatic display, and his place was ably filled by Mr. H. H. Leech, on the "Martlet." This display, besides showing what an excellent pilot Mr. Leech is, also served to emphasize the fact that the "Martlet," as has recently been shown at Hanworth, will make a very attractive sporting machine.

The remaining heats of the Grosvenor Cup had been run off during the morning, and the final was the next event. Again, several interesting entries did not materialise, Mr. Jackman, "J. Wellworth," Mr. Blake with a "Bluebird,"

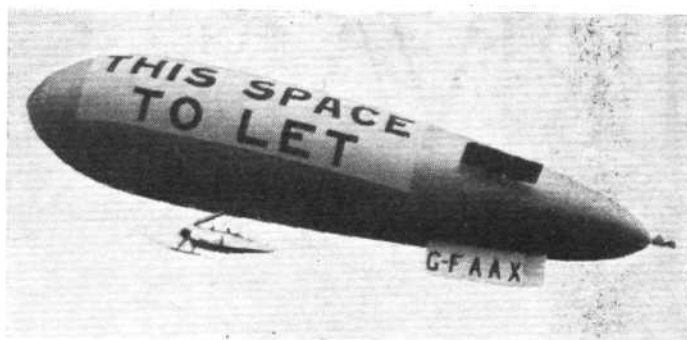


The finish of the Grosvenor Challenge Cup Race: The Newcastle Club's "Moth" PT (G. S. Kemp) comes in first with their other "Moth" QV (H. L. B. Dixon) second, and the Lancashire Aero Club "Avian" EC (A. Goodfellow) third. ("FLIGHT" Photo.)

Messrs. Broad and Bentley on "Moths," and finally, Mr. Anderson, with a "Gadfly," were absent.

The Newcastle Club again got the first and second, PT having this time added another 4 m.p.h. to her speed. It was very difficult to forecast the speeds, as the wind was all over the place, sometimes strong and then the next minute right down again, and everyone's lap times varied considerably.

Sqd.-Ldr. M. Taylor, A.F.C., then took up his squadron, No. 29, from North Weald, of "Siskins," and gave as good a show of formation flying as one has seen. It was rather bumpy, but despite this, everything was done as one would expect it to be done by the R.A.F. After the formation flying, Pilot Officer R. W. Letchworth gave an individual aerobatic display, and one must admit to a difficulty in finding suitable adjectives to describe his event. R.A.F. events are invariably of the same exceedingly high standard, so that one takes their excellence for granted, and to those who know it is quite sufficient to say that it was an R.A.F. show. Following this were an air combat in which Pilot Officer N. E. White finally brings Flt.-Lieut. O. R. Worsley down in "smoke"; an attack on an encampment with bombs and machine guns by a flight of "Siskins," the pilots being Flt.-Lieut. E. Brewerton, D.F.C., Flg.-Officer J. Clarke,



A LIGHTER-THAN-AIR POSTER: The A.D.1 "Blimp," with advertising space to let, pays a visit to the Newcastle Pageant. ("FLIGHT" Photo.)

Pilot-Officer R. W. Letchworth, and Sergt.-Pilot T. W. Morton; Flg.-Officer Clarke and Sergt. Morton then finished the programme with a demonstration of advanced individual training, performing all manœuvres together.

The S.B.A.C. Cup Race had a disappointingly small entry of only four machines, and again P.T., in spite of an increased handicap, secured the cup for the Newcastle Club. Of the races themselves one can say very little. The course was not visible from the aerodrome, and after the start one could only wait until the machines appeared on the last leg; it is a great pity that some place is not chosen for such races where the whole course can be seen by the spectators on the aerodrome, such a course as was used at the Scarborough August meeting was ideal in this respect and provides real interest for the people during the race and not just at the start and finish. The finishes were quite fairly close and there was frequently only an "airscrew boss" between the second and third, which helped to keep up interest.

A diversion occurred about this time in the arrival of the A.D.1, the light airship which has been built at Cramlington Airship Station, and was described in FLIGHT for September 27. She had two large panels on the sides of the "gas-bag" announcing the fact that they were suitable for advertising space. Although the weather was quite gusty she seemed to be easy to handle and to have quite a good turn of speed; while she circled round with the engine throttled back one could hear the pilot and coxswain speaking to each other and after listening to Siskins at close quarters one could not help feeling that life would be much more peaceful in her than in an aeroplane.

Mr. Trantum went up with Lord Ossulton and made a jump in one of the new model Russell-Lobe parachutes. In connection with this jump a rather interesting thing occurred. Just as he jumped Mr. Trantum saw a train approaching on the line which runs alongside the leeward side of the aerodrome, and he thought that there was a danger of him being blown too near the line if he opened at once, so with a presence of mind that everyone will admire he delayed opening for about 200 ft., and so landed well clear of the line and on the aerodrome. The parachute he was using has a much slower rate of descent than the older models, although the size is the same. This has been accomplished by the design of the lobe and he has timed a descent at 17 ft. per second from 1,000 ft.

This type has the advantage that it remains in position in the cockpit and all the wearer has to do is to sit down and buckle on the harness, it also has a Kapok filled back pad



THE LATEST "HERMIAN": R. G. Cazalet's Westland "Widgeon," in which he has just installed a Cirrus "Hermes" engine. ("FLIGHT" Photo.)

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AIR LEAGUE CHALLENGE CUP

1st, NORMAN TODD (Moth)



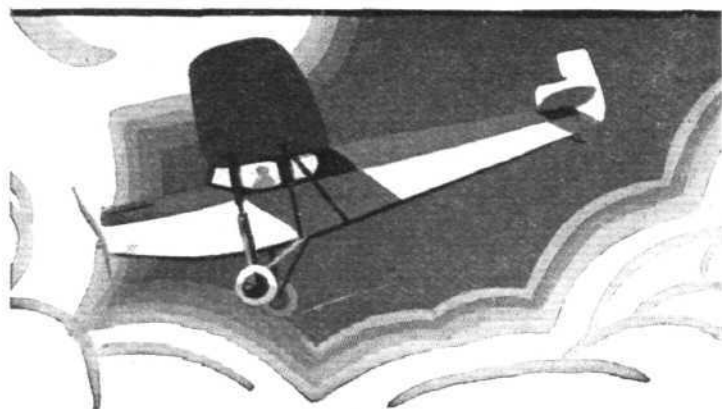
BRITISH AIRCRAFT CONSTRUCTORS' CHALLENGE CUP

1st, Dr. DIXON (Moth)



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"THE THREE RACES": The line-up and winner of each of the three racing events at the Newcastle Pageant. Top, S.B.A.C. Challenge Cup: Dr. H. B. L. Dixon. Centre: Air League Challenge Cup: N. S. Todd. Bottom, Grosvenor Challenge Cup: G. S. Kemp. All three of Newcastle! ("FLIGHT" Photos.)

which serves not only to prevent the harness hurting the wearer's back but will keep him afloat 22 hours, should he have to jump into the water. Private owners are taking an increasing interest in parachutes and 11 have already been supplied to them by the Russell Company.

The club instructor, Mr. G. S. Kemp, finished the pageant with an aerobatic display on a "Moth"; he had, however, a thankless task as the majority of the spectators were endeavouring to get out of the ground before the crowd.

In the evening the club gave a very enjoyable dinner to a large number of guests, amongst whom were Lady Bailey,

Sir Sefton Brancker, Wing-Comdr. Park, and the officers of 29 Squadron, and Comdr. Perrin. Capt. J. H. Boyd proposed the health of the guests and thanked, in appropriate terms, all those who had helped to make the show a success. Wing-Comdr. Park replied on behalf of the guests with a short and well-chosen speech, and on being called upon for a few words, Comdr. Perrin made a strong plea for the continuance of the subsidy; thereafter the Club intimated that having won three cups they felt they (the cups) should be filled (and emptied!), and proceedings took the course they usually do on these occasions.

Grosvenor Challenge Cup Race

	Entrant.	Machine.	Engine.	Pilot.	Handicap.		Position.				Speed. m.p.h.
					Min.	sec.	Heat 1.	Heat 2.	Heat 3.	Final.	
G-EBQR	F/O. A. F. Scroggs	D.H. 53	Cherub III	A. F. Scroggs	10	10	—	—	—	—	—
G-EBXN	R.A.E. Ac.C.	D.H. 53	Cherub III	Flt. Lt. T. B. Bruce	9	50	—	—	—	—	—
G-EBOO	Halton Ae.C.	H.A.C. Minus	Cherub III	Flt. Lt. Ashton	8	53	—	—	—	—	—
G-EBVZ	Miss W. Brown	Avian III	Cirrus II	Miss W. Brown	5	29	—	—	—	—	—
G-EBQV	Newcastle Ae.C.	Moth	Cirrus II	Dr. H. Dixon	5	16	—	—	1	2	93.5
G-AAEC	Lancs Ae.C.	Avian IV	Cirrus II	A. Goodfellow	5	16	—	—	2	3	93.5
G-EBPT	Newcastle Ae.C.	Moth	Cirrus II	G. S. Kemp	5	16	1	—	—	1	98
G-AACV	Miss Leathart and W. Runciman	Spartan	Cirrus III	W. Runciman	4	13	2	—	—	—	—
G-EBSA	Miss Slade	Moth	Cirrus II	Miss Slade	4	01	—	—	—	—	—
G-EBTG	Lady Bailey	Moth	Cirrus	Lady Bailey	3	49	—	—	—	—	—
G-EBQN	R.A.E. Ac.C.	Avian I	Cirrus II	F/O. S. A. Thorn	3	49	—	—	—	—	—
G-AABN	London Ae.C.	Moth	Gipsy	F. Matthews	3	32	—	—	—	—	—
G-AAII	Southern Ae.C.	Martlet	Hornet	H. Leech	3	05	—	—	—	—	—
G-AADA	J. D. Irving	Moth	Gipsy	J. D. Irving	2	35	—	1	—	—	—
G-AAAT	Col. M. O. Darby	Avian	Hermes	E. W. Percival	1	56	—	—	—	—	—
G-EBRM	R. G. Cazalet	Widgeon III	Hermes	R. G. Cazalet	1	28	—	2	—	—	—
G-AAHJ	Lt. Col. Barrett-Lennard	Avian 594	Hermes	Flt. Lt. Le P. Trench	0	18	—	—	—	—	—

Air League Challenge Cup Race

G-EBXN	R.A.E. Aero Club	D.H. 53	Cherub III	Flt. Lt. T. B. Bruce	4	14	—	—	—	—	—
G-EBOO	Halton Ae.C.	H.A.C. Minus	Cherub III	Flt. Lt. Ashton	3	43	—	—	—	—	—
G-EBVZ	Miss W. Brown	Avian III	Cirrus II	Miss W. Brown	1	55	—	—	—	—	—
G-EBPT	Newcastle Ae.C.	Moth	Cirrus II	N. S. Todd	1	55	—	1	—	1	94
G-AAEC	Lancs Ae.C.	Avian IV	Cirrus II	P. Michelson	1	55	—	—	1	—	—
G-EBQV	Newcastle Ae.C.	Moth	Cirrus II	C. Thompson	1	55	—	—	—	—	—
G-AACV	Miss Leathart and W. Runciman	Spartan	Cirrus III	Miss Leathart	1	23	2	—	—	—	—
G-EBWD	H. R. Murray-Philipson	Moth	Cirrus II	H. R. Murray-Philipson	1	23	—	—	2	—	—
G-EBQN	R.A.E. Ac.C.	Avian I	Cirrus II	F/O. S. A. Thorn	1	11	—	2	—	2	104.75
G-EBTG	Lady Bailey	Moth	Cirrus	Lady Bailey	1	11	—	—	—	—	—
G-AABN	London Ae.C.	Moth	Gipsy	J. J. Hofer	1	03	—	—	—	—	—
G-AAII	Southern Ae.C.	Martlet	Hornet	H. H. Leech	0	49	—	—	—	—	—
G-AADA	J. D. Irving	Moth	Gipsy	J. D. Irving	0	43	1	—	—	3	98.5
G-EBRM	R. G. Cazalet	Widgeon III	Hermes	R. G. Cazalet	Scratch	—	—	—	—	—	—

The S.B.A.C. Challenge Cup Race

G-AAEC	Lancs Ae.C.	Avian IV	Cirrus II	A. C. Mills	0	45	—	—	—	—	—
G-EBQV	Newcastle Ae.C.	Moth	Cirrus II	D. Wilson	0	35	—	—	—	3	90.75
G-EBPT	Newcastle Ae.C.	Moth	Cirrus II	Dr. H. Dixon	0	05	—	—	—	1	97.5
G-AABN	London Ae.C.	Moth	Gipsy	J. J. Hofer	Scratch	—	—	—	—	2	96

LIGHT PLANE CLUBS

LONDON AEROPLANE CLUB

REPORT for September.—Pilot instructors: Major H. C. Travers and Capt. F. R. Matthews. Ground engineers: C. Humphreys and A. E. Mitchell. Aircraft: G-AABL, G-AABN, G-EBXS, G-EBZC, G-AAEX, G-EBWY.

Total flying time: Dual instruction: (272), 130 hrs. 55 mins. Solo flying: (220), 91 hrs. 55 mins. Passenger flights: (76), 29 hrs. 10 mins. Test flights (103), 17 hrs. 50 mins. Total: (671), 269 hrs. 50 mins.

During the month, the following members qualified for their "A" licences:—Miss F. Surtees, B. Armstrong, B. W. Houlding, R. D. Berrington, H. V. Williams, H. T. Monyneux, M. L. McCulloch.

CINQUE PORTS FLYING CLUB, LTD.

(SEPT. 29—OCT. 6).—Machines: D.H. Moths G-EBRI and G-EBPM. Pilot instructor: K. K. Brown. Ground engineer: R. H. Wynne. Total for eight days: 25 hrs. 15 mins. Dual instruction: Total (12 members), 14 hrs. Soloist under instruction: (Mr. Green), 30 mins. "A" pilots: Total (4 members) 8 hrs. 30 mins. Joyrides: (1), 10 mins. Tests: (12), 2 hrs. 5 mins.

The break-up in the weather accounts for the reduced flying time this week. As the club closed on Sunday evening, 6th, for holidays, the time for that day has been included, but this only amounted to two tests totalling 20 mins.

On Monday, 30th, Mr. J. Scott-Taggart had the misfortune to strike a rut in the aerodrome while taxiing P.M. slowly down wind, and P.M. tipped up gently on her nose, doing no more damage than breaking the air screw. Mr. Scott-Taggart most sportingly appeared on Wednesday with a new prop, which he presented to the club.

Mr. J. C. Green, who is a prominent member of the Aero Club of Kenya, and who was a Sopwith "Camel" Pilot during the late hostilities, has been taking a refresher course at Lympne, and proved amazingly quick at picking up the art again, in view of the fact that he had not flown for over ten years. He was launched solo on Friday by Mr. Brown, and flew exceedingly well.

During this week, three new lady members commenced instruction; they were Miss M. M. Noakes and Miss M. J. M. Turner, of Maidstone, and Miss G. E. Aitken, of Horley, Surrey. It is very encouraging to see the increasing interest and enthusiasm with which ladies are taking up flying.

On Sunday, October 6, Mr. J. R. A. Cooke, of Mayfield, Sussex, who was recently taught to fly by Mr. Brown at Lympne, flew his Cirrus Moth G-EBUS from Brooklands to Lympne in a very high wind, and made an excellent landing on arrival. As Mr. Cooke has only done about 30 hrs. flying, his performance in such weather was exceptionally creditable. We understand from Mr. Cooke that he has recently made several flights in bad weather, notably one from Northampton to Brooklands last week. Mr. G. F. E. Story, of Hythe, also arrived on Saturday from Stag Lane in his Moth G-EBTZ, which had just been overhauled for a tour on the Continent.

On Sunday, October 6, while the Dungeness lifeboat was rescuing people from a shipwreck in the Channel, and the wind was registering 37 to 43 m.p.h. at Lympne, Mr. Story took off for Brussels, with Mr. H. E. Twaites, Hon. Treasurer of the club, as passenger. They left at 12.53 hrs., and were not reported at Calais until 13.43 hrs., during which time they must have had a very unpleasant crossing over a terrific sea. They finally landed safely at Brussels at 15.08 hrs. Mr. Story was the first pupil trained, *ab initio*, by this club, and has just over 100 hrs. flying experience. He has previously put up some fine flights in bad weather, notably when he won the Rally at Conington early last year and his recent flight from Lympne to Ireland. This last performance, however, was a very fine show, and should be convincing proof of the safety and utility of light aircraft as a means of transport. Mr. Story and Mr. Twaites propose to tour the Continent for a week.

The club will reopen on the morning of Wednesday, 16th instant.

HAMPSHIRE AEROPLANE CLUB

REPORT for September.—Pilot instructor: W. H. Dudley. Ground engineers: E. Lenny and S. Riches. Aircraft: D.H. 60 Moth G-EBOH, Avro Avian G-EBVI, Gipsy Moth G-AAJR and Simmonds Spartan G-AAFR. Flying time for the month: 214 hrs. 50 mins.; dual instruction, 93 hrs. 30 mins.; solo flying, 30 hrs. 30 mins.; "A" pilots, 81 hrs. 40 mins. Instructor's solo and passengers, 9 hrs. 10 mins.

During September 11 new pilot members joined the Club and 1 Associate member.

Messrs. Kingston, Pleydell-Bouverie, Winn and Stusted qualified for their "A" licences.

The flying time for the month is the best this year, in spite of the fact that Mr. Dudley was the sole instructor.

On Sunday, September 8, a record day's flying was achieved, namely 23 hrs.

The total flying put in by the club machines for the nine months ended September 30 exceeds 1,341 hrs., which is 37 hrs. more than for the corresponding period last year.

MIDLAND AERO CLUB

REPORT for September.—Instructors: Messrs. W. H. Sutcliffe and T. W. J. Nash, A.F.M. Engineer: W. J. Halland. Assistant engineer: G. Rees. Aircraft (two): N.T. DB.

The total flying time was 141 hrs. 11 mins. 421 flights. Dual, 77 hrs. 35 mins.; solo, 45 hrs. 45 mins.; passenger, 13 hrs. 35 mins.; test, 4 hrs. 16 mins.

Messrs. P. Stone, H. A. Taylor, B. P. A. Vallance, and Mrs. R. Vereker passed the tests for their "A" licences.

On September 30, EBLT and EBLW were flown back to Castle Bromwich on completion of their fourth annual overhaul for renewal of C. of A.

NORFOLK & NORWICH AERO CLUB

REPORT for September.—The total flying time for September was 108 hrs. 45 mins., of which 52 hrs. 15 mins. were devoted to dual instruction and 49 hrs. 25 mins. to solo flying, the remaining 7 hrs. 5 mins. being tests and passenger flights. Three pupils carried out their "A" licence tests successfully during the month, and several more are just on the brink of their first solos. On the whole the month has been a success, and fourteen new members, six of whom were active, have been enrolled. There is no scarcity of pupils. Our booking sheets are full from day to day, which only proves that flying is becoming more and more popular. At the moment we have two New Zealanders flying with us. One is a member of the Auckland Aero Club, and the other a member of the New Plymouth Club, both arrived within a day of each other, and curiously, while the one is an old Norwich man the other claims Norwich as the home of his antecedents. Both are making extraordinary good headway, and one of them will certainly launch forth into space alone within the coming week, always weather permitting, of course. We have advertised the fact that accommodation can be pro-

vided on the aerodrome if desired by anyone taking an intensive course of instruction. Within a fortnight of that advertisement's first appearance, Mr. C. Parkerson, of New Zealand, availed himself of this accommodation, and is right on the spot, getting on with the job he came for.

The second of a very interesting series of flying, bombing and landing competitions took place during the month, and a full list of entries, sufficient to keep one going until dusk were forthcoming. The rules were very simple, but they work extremely well, and we noticed in particular that these competitions do tend to improve flying form. Points were given for take off, approach, and landing. Possible points obtainable were: Take off, 20; approach, 40; landing, 40; total, 100. In the first competition it was noticed that a great many competitors lost points on their take off, and as the results were posted on the notice board, they doubtlessly considered this carefully, and on the last occasion scarcely any points were lost on that score. The first prize for this competition was the Alexander Duckham Silver Challenge Tankard, and was won for the first time by W. J. Pickthorn. One of these competitions will be held every month in future.

We have been developing a photographic department in the club during the last month, and it is meeting with much success. For some time the club has had possession of a very fine aerial camera, and now an exceptionally good dark room has been fitted up with enlarger and all necessary plant for some really first-class work. Enquiries for photographs are welcomed.

Three more members of the club have become private owners during this month, having all purchased Avians, and now we have no less than seven private owners, which is quite a respectable number for a provincial club at this stage. The second annual ball is taking place in St. Andrew's Hall, Norwich, on November 26, and a very large gathering is anticipated. Anyone wishing to attend should make very early application for tickets, as it may be recalled last year a large crowd of people were disappointed when a fortnight before the date of the ball all tickets had been disposed of. St. Andrew's Hall is a fine old building, and will accommodate a much larger crowd than the hall we had last year, but the demand for tickets is just as large as before. The following people have honoured us by becoming Vice-Presidents of the Club. The Rt. Hon. the Viscount Elmley, Bart., M.P.; the Rt. Hon. Sir Samuel Hoare; Sir J. Field Beale; J. A. Christie, M.P.; J. Cator, M.P.; P. E. T. Carill Worsley; and James Hardy.

SCOTTISH FLYING CLUB, LTD.

REPORT for September.—With the Moths in commission, the Scottish Flying Club flew 145 hrs. 30 mins. during the month of September. Of this time, 74 hrs. 55 mins. was taken up by dual instruction, a figure which constitutes a record for the Club. Although only one licence was actually awarded—to Miss E. A. R. Anderson—seven other members completed the tests for the "A" ticket during the month. Miss Anderson was the candidate chosen by the Club to benefit under the Scholarship scheme of the Air League and is the second lady in Scotland to be awarded a pilot's licence. A noteworthy performance was put up by Mr. A. F. Wallace, who on his first solo, on September 17, completed 50 mins. in the air and then proceeded to complete the height test, etc., for his licence on the same morning.

With the approach of winter, activity is now being transferred to indoors, and the Badminton section, which proved so popular last season, has held its first meeting. As before, meetings will be held on Tuesdays and Thursdays of each week throughout the season at 7.30 p.m. The first of the club dances is to be held on Friday, October 25, at the Piccadilly Club, 92, Sauchiehall Street, Glasgow, at which it is expected there will be a large attendance and to which all interested in the movement are cordially invited. Tickets may be had at the aerodrome or from Mr. H. W. Smith, 101, St. Vincent Street, Glasgow, price 5s.

FROM THE FLYING SCHOOLS

Brooklands School of Flying, Brooklands Aerodrome

(SEPT. 30—OCT. 6).—Flying time, 37 hrs. Strong gales interspersed with rain throughout the week have prevented a great deal of flying being done. During the latter part of the week an aerial tour was carried out by some of our private owner pupils who wished to do their cross-country experience. Most of the club aerodromes in the north were visited, and it is very pleasing to hear reports of the great hospitality shown at each place of visiting.

During the week Mr. J. M. McGuffie qualified for his "A" licence, as also did Mr. J. E. Foster. Mr. J. H. Chapman, one of our pupils who has just qualified for his licence, has now bought G-EBUZ from us. A number of pupils at the present time are taking the opportunity during the winter months to qualify for their ground engineers' licences, having already obtained pilots' licences.

The Phillips and Powis School of Flying

(SEPT. 27—OCT. 3).—Flying time, 22 hrs. 40 mins. Instructor: W. Giddy. The following new pupils have this week joined the School: Dr. Hoole and Messrs. Stisted, Browne, Perkins, and Crosswell.

We have supplied Mr. I. H. Worth with a new Gipsy, taking his second-hand Moth in part exchange.

Mr. Skuce has to be congratulated on passing his test for "A" licence in a most satisfactory manner.

OVERSEAS CLUBS

SINGAPORE FLYING CLUB

(AUG. 18—24).—Total flying time, 11 hrs. 35 mins. Dual instruction, 4 hrs. 40 mins.; solo flights, 4 hrs.; passenger flights, 1 hr. 30 mins.; tests, 1 hr. 25 mins.

With the exception of 1 hr. 50 mins., the whole of the time this week was put in on Saturday afternoon.

(AUG. 25—31).—Total flying time, 9 hrs. 40 mins. Dual instruction, 5 hrs. 35 mins.; solo flights, 2 hrs. 55 mins.; passenger flights, 50 mins.; tests, 20 mins.

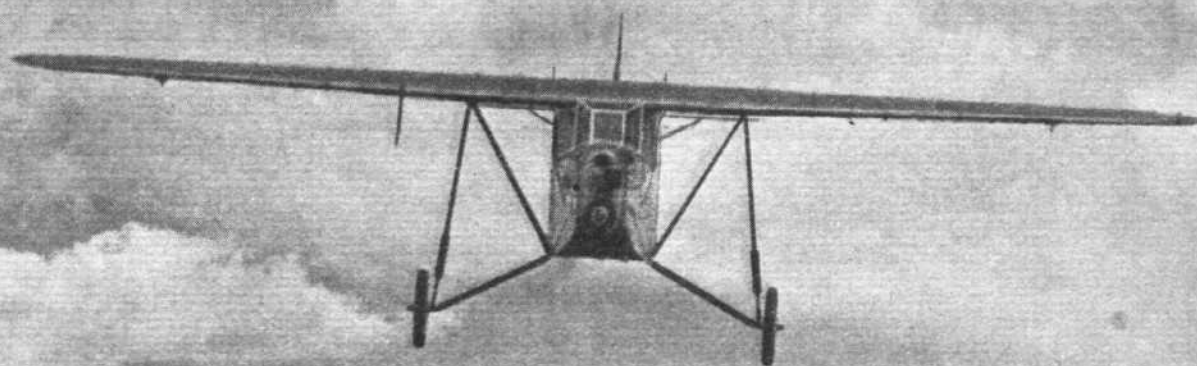
On August 25, G-AADK was overturned on landing, but was eventually salvaged after some difficulty. It will be some time before it is again airworthy, as there is a great deal of work to be done on it.

Flying time for the month of August amounts to 50 hrs. 20 mins., bringing the total to date up to 644 hrs. 47 mins.

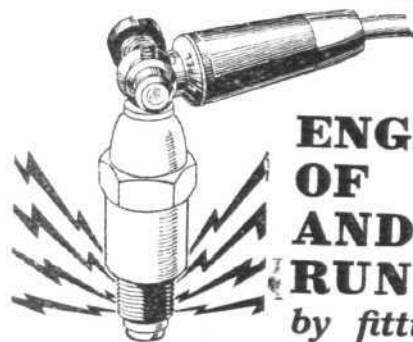
We take this opportunity of welcoming our new instructor, Flight-Lieut. F. H. Potter, who duly arrived per s.s. *Karmaia* on August 24.

(SEPT. 1—7).—Total flying time, 1 hr. 40 mins. Dual instruction, 1 hr. 40 mins.

Owing to the fact that we have at present only one machine in commission and that we have been experiencing unfavourable weather conditions, very little time has been put in this week.



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THE ROYAL AIR FORCE

London Gazette, October 1, 1929.

General Duties Branch

The follg. Flying Officers are granted permanent commns. in this rank, Oct. 1:—D. F. W. Atcherley, G. D. Harvey. The follg. Pilot Officers on probation are confirmed in rank; Sept. 14:—A. G. Adnams, A. F. P. Anning, C. M. Champion de Crespigny, G. H. Clarke, E. W. Downing, H. A. Fenton, H. R. Hughes-Hallett, A. E. Louks, D. S. McDougall, L. P. Rowley, J. S. Shakespeare.

Pilot Officer R. David is promoted to rank of Flying Officer; Jan. 9 (substituted for *Gazette*, July 16). The follg. Pilot Officers are promoted to rank of Flying Officer:—C. E. V. L'E. Feasey; Jan. 18. E. G. Banham, W. J. Crisham, J. H. Lock, R. Mountain, J. B. W. Pugh; Sept. 16.

Flying Officer E. G. Hordern is placed on half-pay list, Scale B, Sept. 6, 1929, to Jan. 15, 1930, inclusive. The follg. are placed on retired list on account of ill-health:—Flight-Lieut. E. K. Blenkinsop; Sept. 23. Flying Officer H. T. Satterford; Oct. 1. The follg. Flying Officers are placed on retired list at their own request; Oct. 1:—R. B. Harnden, W. Morgan, E. Smith. Flying Officer E. C. Foreman is transferred to Reserve, Class A; Sept. 20:—Flying Officer E. M. Thomas resigns his permanent commn.; Oct. 1. The short service commn. of Pilot Officer on probation W. J. Hodge is terminated on cessation of duty; Oct. 1.

Stores Branch

The follg. Flying Officers are granted permanent commns. in this rank, Oct. 1:—E. G. M. Charleson, H. M. S. Dawes, G. H. Doveton, F. W. Felgate, P. J. Mote, L. Taylor.

Medical Branch

Flight-Lieut. E. J. Jenkins resigns his permanent commn.; Sept. 19.

Chaplain's Branch

The Rev. S. H. Keen is granted a permanent commn. as Chaplain with the relative rank of Group Capt. for duty as Staff Chaplain (Wesleyan); Sept. 12.

RESERVE OF AIR FORCE OFFICERS

General Duties Branch

C. R. Robbins is granted a commn. in Class A as a Flying Officer on probation; Sept. 20. Pilot Officer on probation D. H. Duder is confirmed in rank; Sept. 3. The follg. Pilot Officers of the Special Reserve are promoted to rank of Flying Officer:—G. D. S. Horstall; July 2. J. F. R. Hunter, W. O'B. Knox; July 27. Flying Officer A. C. Heaven, M.C., relinquishes his commission on completion of service; Sept. 30.

AUXILIARY AIR FORCE

General Duties Branch

No. 601 COUNTY OF LONDON (BOMBER) SQUADRON.—The Right Hon. Sir Philip A. G. D. Sassoon, Bart., G.B.E., C.M.G., M.P., to be Squadron-Leader and to command the squadron; Sept. 23.

AIR MINISTRY NOTICES TO AIRMEN

Temporary Conditions Affecting Flying

Penshurst Landing Ground.

Digging operations are in progress on a strip of ground measuring 200 yds. by 5 yds., lying to W. of the landing circle.

The area of work is marked with flags by day, and with red lamps by night.

Cancellation.—Notice to Airmen No. 30 of 1927 is cancelled.

(No. 58 of 1929).

Air Display at Hedon Aerodrome, Hull

It is hereby notified:—

Between the hours of 13.20 and 17.20 on October 10, 1929, an Air Display will be held at Hedon Aerodrome, Hull.

Pilots are requested not to land at this aerodrome between the hours of 13.20 and 17.20 on that date, and, in order to avoid collision with Royal Air Force and civil aircraft taking part in the display, they are asked to refrain from flying in the vicinity of the aerodrome in question.

Pilots of aircraft visiting the aerodrome are requested to arrive before 13.20 hours and no machine may leave the aerodrome or take off until after 17.20 hours.

(No. 59 of 1929.)

Airship Operations: General Warning

1. In view of forthcoming airship operations, the attention of pilots is drawn to the rules for air traffic in the vicinity of airships, as given in the Air Navigation (Consolidation) Order, 1923, Schedule IV, Section III, paragraphs 21 and 22, as amended by the Air Navigation (Amendment) Order, 1927.

2. The rules in question are as follow:—Subject to the provision that an aircraft about to land on an aerodrome be given free way, flying machines shall always give way to balloons, fixed or free, and to airships, and airships shall always give way to balloons, whether fixed or free.

An airship when not under its own control shall be classed as a free balloon.

(No. 60 of 1929.)

PERSONALS

Married

The marriage took place on October 3, at St. Mark's, North Audley Street, of Flight-Lieut. DOUGLAS RAIKES WHITE THOMPSON, son of the late Mr. J. Thompson and Mrs. Thompson, of Betshanger, Little Heath, Herts, and Miss AILEEN MILLICENT HILL, daughter of the late Rev. J. Seymour Hill and Mrs. Seymour Hill, of Park House, Southwell, Notts.

To be Married

The engagement is announced between Flight-Lieut. PERCY J. BARNETT, M.C., R.A.F., younger son of the late Mr. John V. Barnett, of Tyndalls Park, Clifton, and of Mrs. Barnett, Heathcote, Gerrards Cross, and MARJORIE ANNA, younger daughter of Mr. and Mrs. EDWARD BOMER, Marsham Manor, Gerrards Cross.

Item

The will of the late CAPT. ST. JOHN GERVAIS SHADWELL CLERKE, late the West Riding Regt. and R.A.F., of Thornton Avenue, Chiswick, W., has been proved at £8,112.

No. 16 Squadron, R.A.F. Reunion

The third annual reunion dinner of No. 16 Squadron, R.A.F., will be held on October 26 at the Talbot Restaurant, London Wall. Applications for tickets, price 6s. 6d., should be made to J. Rusdell, 199, Springbank Road, Lewisham, London, E.13.

The Royal Air Force Memorial Fund

The usual meeting of the Grants Sub-Committee of the Fund was held at Iddesleigh House on October 3. Mr. W. S. Field was in the chair, and the other members of the committee present were Mrs. L. M. K. Pratt-Barlow, O.B.E., Sqdn.-Ldr. A. H. Wann. The committee considered in all 15 cases and made grants to the amount of £285 13s.

Webster, a Westland IV, and a Wheel

WHEN Flight-Lieut. S. N. Webster was putting the Westland IV monoplane through her airworthiness tests (which, by the way, she passed extraordinarily well) at Martlesham, on October 5, he demonstrated a remarkable feat of airman-ship. The "IV" had just completed the full tests and when on the last, a pin in the oleo leg sheared in taking off, allowing the wheel and axle to swing beneath the fuselage out of sight of the pilot, who thought he had lost them! However, Webster flew across the 'drome several times, lightening the machine of all the ballast, and then climbed to about 2,000 ft.—turned off the petrol and ran the collector box dry. He then glided the machine down and made a perfect landing on the starboard wheel. In doing so, the "missing" wheel swung back into position and kept the machine off the ground, although with a considerable list to port; only a very little damage resulted, thanks to Webster's wonderful piloting.

D.H. "Moths" Abroad

The Spanish Royal Air Force has ordered two D.H. "Gipsy Moths" for training purposes. The De Havilland Company also inform us that they have just received official notification to the effect that the British Certificate of Airworthiness for the Moth will henceforth be accepted by the French authorities. It is, therefore, now in order for the Frenchman to register a Moth in his own country, and the

usual subterfuge of registration in the name of a British friend is dispensed with. All that the French authorities require is production for inspection of the British Certificate of Airworthiness. This procedure applies to private owners only, and not to cases of commercial or taxi work, etc.

Flight to India and Back

In recognition of the flight to India and back, the Royal Aero Club has awarded its Gold Medal to Capt. C. D. Barnard, and an address of congratulation to Her Grace The Duchess of Bedford. Capt. Barnard, accompanied by the Duchess of Bedford, accomplished this flight in eight days, August 2-9, 1929, on a Fokker monoplane, fitted with a Bristol "Jupiter" engine, the distance covered being, approximately, 10,000 miles.

The Guild of Air Pilots and Air Navigators

THE first General Meeting of the Guild of Air Pilots and Air Navigators is to be held at the Hotel Cecil (Indian Suite), at 6.45 p.m., Saturday, October 19. This meeting is to be followed by an Inaugural Dinner at 8 o'clock p.m., and, as accommodation is limited, all members should make early application for dinner tickets to the "Clerk to the Guild," L. A. Wingfield, Esq., 61, Cheapside, E.C.2. Members may bring lady guests. The price of the tickets is 12s. 6d. each, exclusive of wines. Lady Cobham has kindly consented to act as hostess on this occasion.

CORRESPONDENCE

AIR NAVIGATION LICENCES

[2210] The next examination for the first- and second-class Air Navigation Licences will be held in April, 1930, and I have been requested by the Guild of Air Pilots and Air Navigators to act as honorary organiser for the next class until such time as the Guild is in a position to take over these duties.

The Air Ministry have kindly loaned instruments and tables required for this class, and the Royal Aeronautical Society have also kindly offered the use of their library at 7, Albemarle Street, W.1.

It is proposed to hold the class on Monday evening of each week from the end of October until January, and from the end of January twice weekly, on Mondays and Fridays, from 6-7.30 on each night. The class will be conducted by Mr. C. B. Collins of the Air Ministry, and Sqdn.-Ldr. E. L. Johnston, A.F.C., of Cardington, and Capt. Entwistle, of the Air Ministry, will also assist with lectures on meteorology.

The fee for the whole course of lectures will be 5 guineas, and members will also be required to be responsible for wear, tear, loss or damage to instruments, tables, etc., on loan from the Air Ministry.

As the class will be strictly limited, intending applicants are requested to write at the earliest opportunity to me, enclosing their cheque for the necessary fee.

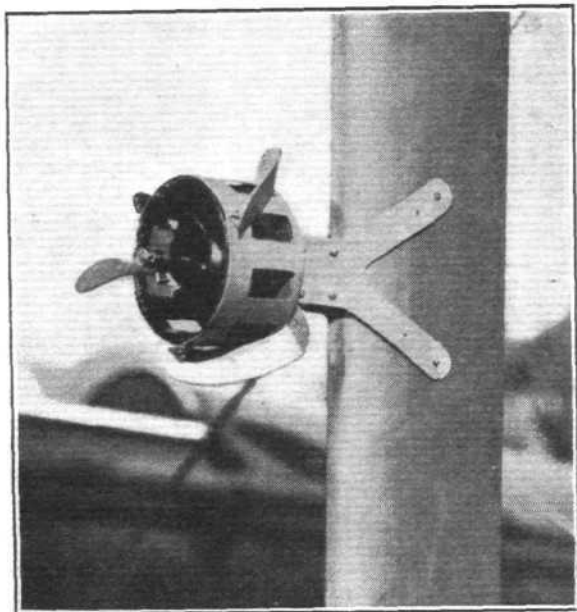
CAPT. A. G. LAMPLUGH,
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October 7, 1929.

THE WYNN ANTI-STALL SYREN

AN interesting device which was seen—and attracted a certain amount of attention—at the recent Leicester Club opening meeting was the Wynn anti-stall syren. This syren (to which reference has recently been made in FLIGHT) gives an audible warning when the air speed drops below a certain specified figure.

The Wynn anti-stall syren has only two moving parts and is very simple, besides being of small weight. There are two concentrically mounted cages with slots cut in their circumferences as in syrens sometimes fitted to cycles. Both these are free to revolve about the common axis. The outer cage



The Wynn Anti-stall Syren. ("FLIGHT" Photo.)

is fitted with vanes which move it, when driven through the air, in a clockwise direction. The inner cage, whose centre part is cone-shaped to deflect air through the slots, is driven by a two-bladed air-screw in an anti-clockwise direction. The inner cage is mounted against a spring, and above the predetermined stalling speed is forced back by the airflow against this spring until the inner cage is fast against a cork friction ring. Under these conditions the two cages rotate together. But, when the stalling speed is reached, and the air pressure dies down, the spring forces the inner cage away from the ring until the inner cage is rotated by its own airscrew and the noise starts. As the spring is adjustable

the syren can be adapted to any size of aircraft. The one bearing is grease packed and does not require attention.

The syren is easily heard by the pilot and can even be heard on the ground when the machine is 1,500 feet up.

Salmsons in England

LAND, we are informed, has been acquired on the Kingston By-Pass Road for the immediate erection of a factory for the manufacture of the Salmson engine in this country. The company has now been formed and is styled the British Salmson Aero Engines, Ltd. We are looking forward with interest to the early debut of the British Salmson.

Information Wanted

CAPT. STANFORD E. MOSES, Associate Editor of the *Pacific Flyer* (San Francisco) is anxious to receive catalogues, pamphlets (or similar advertising matter), posters, and data regarding air travel schedules, from European Aircraft manufacturers and air transport companies. Those willing to comply with his request should send any matter to him, c/o Air World Publishing Co., 93, Market Street, San Francisco, California, U.S.A.

The Scottish Flyer (The Journal of the Scottish Flying Club)

THE Scottish Flyer, which should not be confused with the Flying Scotsman, aims at higher and wider things than being bound to the steel rails of convention. Its scope is unlimited and judging from the first number it should admirably fill a very definite want. Its editor seems to have struck the right tone and is to be congratulated on producing a journal which should have a wide appeal not only to the members of his own club but also to those of other clubs.

PUBLICATIONS RECEIVED

Aeronautical Research Committee Reports and Memoranda. No. 1220 (M.60).—The Age-Hardening of Some Aluminium Alloys. By Dr. W. Rosenhain. October, 1928. Price 2s. net. H.M. Stationery Office, Kingsway, London, W.C.2.

Mitteilungen des v. Tschudi-Archivs des Daniel Guggenheim Fund. Nos. 1 and 2. Aero-Club von Deutschland, Blumenhof 17, Berlin, W.35.

Vickers Virginia X Aeroplane (Two Lion Engines). Air Publication 1363. H.M. Stationery Office, Kingsway, London, W.C.2. Price 3s. net.

AERONAUTICAL PATENT SPECIFICATIONS

Abbreviations: Cyl. = cylinder; i.c. = internal combustion; m. = motor. The numbers in brackets are those under which the Specification will be printed and abridged, etc.)

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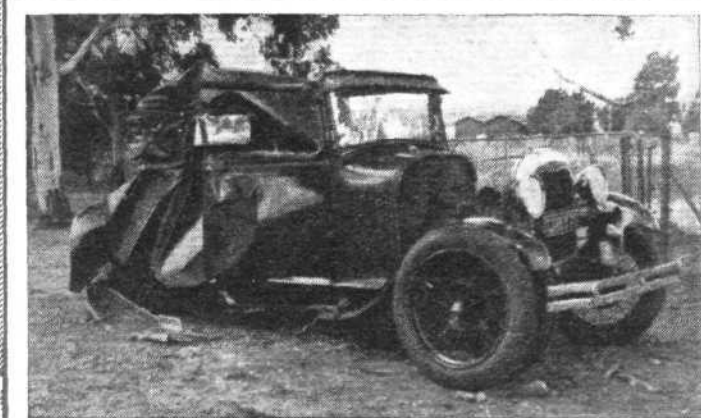
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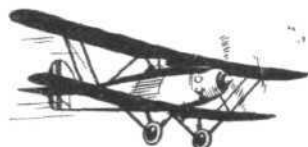
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